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PROVISION OF FEDERAL GOVERNMENT PUBLICATIONS IN ELECTRONIC FORMAT TO DEPOSITORY LIBRARIES

Report of the

Ad Hoc Committee on Depository Library Access to
Federal Automated Data Bases

To the

JOINT COMMITTEE ON PRINTING, UNITED STATES CONGRESS

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LETTER OF TRANSMITTAL

AD HOC COMMITTEE ON DEPOSITORY LIBRARY
ACCESS TO FEDERAL AUTOMATED DATA BASES,
December 1984.

Honorable FRANK ANNUNZIO,
Chairman, Joint Committee on Printing,
U.S. Capitol, Washington, DC.

DEAR MR. CHAIRMAN: As Chair of the Ad Hoc Committee on Depository Library Access to Federal Automated Data Bases, I am pleased to transmit to you on behalf of the full Committee our final report, which was discussed and accepted in principle on June 7, 1984.

The Joint Committee on Printing appointed the Ad Hoc Committee in May 1983. The charge to the Committee was to evaluate the feasibility and desirability of providing access to Federal Government information in electronic formats to depository libraries. Those appointed to the Committee represented the public and private sectors.

Committee deliberations were organized around a series of monthly briefings on Federal information programs, electronic distribution systems, automated data bases, and state-of-the-art technology. Between May 1983 and May 1984 the Committee met for 2 days each month, at which time invited guests presented programs and issues raised were discussed. A survey of all depository libraries was conducted to determine the current use of data processing equipment, publications in electronic format and participation in electronic networks.

The Committee adopted the following resolution:

> The Committee unanimously supports the principle that the Federal Government should provide access to Federal information, as defined in sec. 1901, U.S.C., Title 44, in electronic form through the depository library system. Recognizing that it is technologically feasible to provide such access to electronic information, the Committee recommends that the economic feasibility be investigated through pilot projects.

The Ad Hoc Committee recommends that the Joint Committee on Printing and the Superintendent of Documents initiate a pilot program in which depository libraries will receive Federal information in electronic form and provide it to the general public free of charge.

In recommending guidelines for the selection, planning, and evaluation of the pilot projects, the Committee has identified the following criteria: willingness of Federal agencies to publish in electronic format, availability and value of publications, methods of distribution, formats, costs, adherence to standards, and provision of "easy-to-use" software. Criteria for selection of libraries for the pilots should include geographic location, types and size of libraries, willingness and ability to participate in the pilot(s), and requirements for equipment and staff training. In monitoring the pilot attention should be given to organizational relationships, potential for joint public/private sector efforts and cooperation and study of the impact on users.

Respectfully submitted,

BERNADINE ABBOTT HODUSKI, *Chair.*

PREFACE

The Joint Committee on Printing (JCP) is responsible for establishing policy and procedures to effect a successful implementation of the Congressional Federal Depository Library Program as provided in title 44, chapter 19 of the United States Code. This program makes Federal Government publications available without charge to the general public in depository libraries throughout the country. Noting that "Federal Government information is increasingly being stored and retrieved through * * * new technologies * * * rather than through traditional formats of paper and microform [with the result] that an increasing amount of information in electronic format is not being provided to depository libraries," Senator Charles McC. Mathias, Jr., called for the establishment of an Ad Hoc Committee to evaluate the feasibility and desirability of providing access to Federal Government information in electronic formats to the public through the congressional depository libraries.[1]

The Joint Committee established an Ad Hoc Committee on Depository Library Access to Federal Automated Data Bases on May 5, 1983.

The Committee was asked to determine:

1. What and how much Federal Government information is in electronic format?
2. If depository libraries have the ability to access the new formats?
3. What are the costs and benefits of providing information in electronic format?

The Committee was also asked to identify major policy areas which should be addressed in order to meet the intent of pertinent provisions of title 44, United States Code, to make Government information publicly available to citizens at no charge through the depository library system.

In December 1982, 15 organizations, including Federal agencies, which broadly represent the producers, disseminators, and users of Government information, each were invited to nominate three candidates for membership on the Ad Hoc Committee by then Chairman of the Joint Committee on Printing, Senator Charles McC. Mathias, Jr. Representative Augustus F. Hawkins, Senator Mathias' successor as Chairman of the Joint Committee, selected one nominee from each organization to serve on the Ad Hoc Committee.

To carry out its charge, the Ad Hoc Committee's deliberations were organized around a series of briefings on governmental and private information programs, electronic distribution systems, automated data bases, and state-of-the-art technology. Between May 1983 and May 1984, the committee met for 2 consecutive days each month. Representatives from the Government and private organizations familiar with computerized information transfer systems, were invited to speak about those systems. Several briefings took place as part of field trips in the Washington, DC, area.[2]

At the same time, the Ad Hoc Committee formed three working groups: (1) Subcommittee on the Availability of Federal Data in Automated Format; (2) Subcommittee on Depository Library Community; and (3) Subcommittee on the State of the Technology.

A survey was conducted of all depository libraries to determine the current use of electronic hardware and computerized data bases as well as their participation in local/regional/national networks providing access to this type of information. A copy of the questionnaire, summary of findings, and statistical tables are included in appendices 4, 5, and 6 of this report.

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[1] Letter of December 9, 1982, from Senator Charles McC. Mathias, Jr., asking organizations and agencies to nominate candidates to serve on Ad Hoc Committee. (See appendix 9 for full text of letter.)

[2] For a complete list of briefings, field trips, and summaries of presentations see appendices 1 and 2.

A "Federal Depository Libraries Workshop" was conducted by the Office of Technology Assessment (OTA) for the Ad Hoc Committee on February 1, 1984, with the assistance of the Congressional Research Service (CRS) and the General Accounting Office (GAO).[3]

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[3] For summary of OTA workshop see appendix 6, p 124

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CHAPTER I.—FINDINGS

There are 1,382 libraries in the United States serving as congressional Federal depositories. At least one depository library is located in each of the 435 congressional districts. These libraries receive publications issued by the executive, judicial, and the legislative branches at no charge in exchange for providing free public access. This program is administered by the Superintendent of Documents, U.S. Government Printing Office (GPO). Regional depositories receive one copy of all materials distributed. Partial depositories receive only those materials they select.

As electronic technology has advanced, so too has the capability improved for the generation, processing, storage, and retrieval of information. Most Federal agencies now use word processing and photocomposition techniques in the generation of their publications. More than half of the machine-readable statistical files are produced by agencies, which have no procedures for distributing their data. Often, documents distributed to the depository libraries in paper or microfiche are also available in full text in electronic form. In other cases, and particularly with the decrease in Federal publishing, much Government information is stored only in electronic media, and often it is less accessible to the public than previously. As more data is computerized and with the increasing use of personal computers to retrieve, manipulate, and display that data, fewer publications will have paper counterparts. As the cost of traditional ink on paper rises and the manipulation of paper documents becomes comparatively more cumbersome, we can expect more Government information to be available only through electronic media.

Some Government agencies are making their publications electronically available to the public either directly, or through data base providers and vendors. These services provide access to Federal data bases; some of the data bases are more timely than their paper and microfiche counterparts; they provide the power of Boolean logic for searching; they add indexing and abstracting to the full text; and they provide selective announcement services and document delivery, either by means of a user profile or as a byproduct of the user's research. Many business offices and research and academic institutions regularly use such services, and ultimately many homes will have access through personal computers. But many U.S. citizens will have no access to this data, unless it is provided to them through the depository libraries.

Members of the library community in response to information requests from their various constituencies, including researchers and business people, repeatedly have asked that GPO work with the Joint Committee on Printing to expand the depository library program to include a variety of nonprint materials.

In June 1979 the American Library Association (ALA) adopted a resolution requesting full and free access to Government publications in all formats.[6] In April 1980 and September 1982 DLC[7] passed resolutions supporting "* * * access by depository libraries to unclassified Government information in electronic data files." The general counsel of GPO in response to the DLC resolution indicated in 1982 that in his opinion "under the current provisions of title 44, the

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[6] For full text of the American Library Association resolution see appendix I, p. 111.

[7] The Depository Library Council to the Public Printer (DLC) is composed in part of representatives, nominated by the three major library associations in the United States: The American Library Association (ALA), American Association of Law Libraries (AALL), and the Special Libraries Association (SLA).

Government Printing Office is not required to provide access to bibliographic computer data bases belonging to Federal agencies to depository libraries." [8]

Thus, the information requirements identified by citizens, librarians, and professional associations resulted in congressional recognization of the need to study the problem. The Ad Hoc Committee was established to investigate the matter and to make recommendations about the distribution to all citizens of the Federal information in electronic format through their depository library system.

The Availability of Federal Data in Electronic Format

During its investigations, the Committee reviewed documents identifying thousands of Federal publications available in both printed and electronic format. It concluded that the number of Federal data bases is immense, and that it will increase as Federal agencies find it less expensive to produce information in electronic format and discover that electronic data can be useful in the performance of Government's business. The Committee examined catalogs of Government-generated software and data files (e.g., those compiled by the National Technical Information Service (NTIS) and the GAO). It should be remembered that Government data files are used to support a wide variety of systems and services.

The Committee found that there are some mechanisms already in place for the distribution of Government data files:

- Free distribution of data tapes, disks, et cetera directly by Government agencies to the specific constituencies of those agencies (e.g., Bureau of the Census); [9]
- Sale or lease of Government data tapes, magnetic disks, et cetera directly by Government agencies (e.g., NTIS,[10] National Library of Medicine,[11] the Bureau of Census and the Department of Agriculture); [12]
- Sale of electronic photocomposition tapes by Government agencies (e.g., sale of the Federal Register tapes by GPO);
- Provision of free on-line access to data bases by Government agencies (e.g., U.S. Patent Office Classification and Search Support Information System (CASSIS) available free to Patent depository libraries); [13]
- Provision of fee-based, on-line access to data bases by Government agencies (e.g., National Library of Medicine and Chemical Substances Information Network (CSIN); [14]
- Provision of fee-based, on-line access of secondary (private) data bases derived from, or extracted from Government-originated data files by commercial organizations (e.g., Lockheed's DIALOG, BRS, ORBIT, LEXIS, and Westlaw).[15] These fee-based, on-line data bases often result from value-added activity by the providers. This activity includes reprocessing, reformatting, or manipulation of the original Government-generated information, and sometimes also the merging of the Government data with data from other sources;
- Provision of free or fee-based access to data tapes, disks, on-line data through a Government contractor (e.g., HUD contract with ABT Associates to provide access to American National Housing Surveys, Office of Aging, and Bureau of Justice Statistics contract with ICPSE).

The Committee could not identify any one publication that lists all of the Federal Government information files, nor did the Committee contemplate creating such a publication.[16]

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[8] For full text of Depository Library Council resolutions and GPO General Counsel and Superintendent of Documents responses see appendix 8, p. 112.

[9] See presentation by Michael G. Garland in appendix 2, p. 27.

[10] See presentation by Kenyon C. Rosenberg in appendix 2, p. 26.

[11] See presentation by George R. Thoma in appendix 2, p. 29.

[12] See presentation by Sam Waters in appendix 2, p. 39.

[13] See presentation by William S. Lawson in appendix 2, p. 18.

[14] See presentation by Sidney Siegal in appendix 2, p. 36.

[15] Acronyms and initialisms identified in appendix 11, p. 117

[16] Useful catalogs of existing Government-generated software and automated data files are listed in appendix 10, p. 116.

The Depository Library Community

To get an overview of the activities of the library community, the Committee developed a questionnaire, which was sent to all 1,382 depository libraries. There were 1,291 responses received as of April 1984. The questionnaire requested such information as the type and size of the library, telecommunications systems in use, cooperative technical processing services, types of networking, type of charges to patrons, computer equipment (mainframes, minis, micros, and terminals), and in what format (paper, microfiche, electronic) some 44 Government research publications were accessed.

From the survey, the Committee learned that there is a wide array of computer equipment already in place in depository libraries or their parent institutions, and that many of the libraries regularly make use of time-sharing services for searching data bases, both Government and non-Government. This equipment is at least potentially available for use in conjunction with, or in support of, the depository materials, and it is in some cases already being used for these purposes. However, the diversity of available equipment means that issues of compatibility will have to be addressed in offering materials in electronic media to depository libraries. This information coupled with the various presentations to the Ad Hoc Committee during the months of briefings enabled the Committee to conclude that with the reduction in costs of evolving technology, most libraries will have the capability to access electronic data bases by the late 1980's.

However, according to some speakers, many depository libraries are suffering from declining budgets for personnel and resources.[17] Just as there are cost burdens associated with receiving, processing, and storing print and fiche media, there are similar costs and responsibilities with electronic media. Libraries vary widely in their ability to process traditional media and make it available to the public. Although access to information in an electronic format may lessen the burden of processing, classifying, and storage,[18] it seems appropriate to add data bases gradually to the Depository Library Program. This growth will allow expertise in manipulating electronic data to develop, technical support systems to be established and patron sophistication to evolve.

The answers to the Committee's questionnaire provided an overview of depository libraries, their computer capability, and their utilization of already-existing data bases.[19] The availability of computers in depository libraries and their parent institutions seems substantial.

The State of Technology

The charge to the Committee was to analyze current advances in electronic information technology. In the process of examining the state of the art, two observations immediately become apparent: (1) There is no single technology or medium that encompasses all electronic information in the same manner as paper or microform; and (2) the technology of computer storage media and telecommunications are in a period of rapid change.

Because of the complexities of present and future computer technology, the Committee invited speakers to discuss specific information transfer systems, now being explored or implemented, and other speakers to discuss global implications of changes in information transfer. In addition, OTA was asked to organize a 1-day workshop to summarize in a single forum the subjects examined during the earlier meetings.

There were a number of presentations about information systems having significant future implications. Dr. Lorrin Garson, of the American Chemical Society (ACS), spoke about the Primary Journal Project, in which the complete texts of 18 journals of the American Chemical Society were placed on-line, with full text-searching and print-on-demand capability.

The ACS Primary Journal Project anticipates the technical and commercial feasibility of creating an on-line system for journal/report literature with a print-on-demand capability. It is possible for an author to prepare a manuscript in electronic form using a word processor and to transmit that manuscript to a vendor via a telecommunications system. A reader may then selectively access the information electronically.

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[17] See presentations by Jeanne Isacco and Nancy Cline in appendix 2, p. 34.

[18] For example, an optical disk could include up to 54,000 frames of images on a single side. Thus, over 50,000 U.S. Geological Survey (USGS) 7½-minute maps could be reproduced on 200 double-sided disks.

[19] An analysis of the questionnaire can be found in appendix 5. The questionnaire itself can be found in appendix 4; the tabulated answers at appendix 6.

Mr. William Lawson, Administrator for Documentation, U.S. Patent and Trademark Office (PTO), spoke on the PTO's Classification and Search Support Information System (CASSIS). The U.S. Patent and Trademark Office has made the on-line CASSIS available to inventors both in its Public Search Room in Crystal City, VA, and in some 50 patent depository libraries throughout the United States. Thus a federally produced electronic data base is made available by law to the general public, without direct cost to either the library or the citizen. CASSIS serves the dual purposes of assisting inventors who need patents and stimulating technological innovation by publicizing patents which have been granted. Most of the PDL's are also congressional Federal depository libraries.

Mr. Stan Prochaska, Chief, Office of Governmental and Public Affairs of the Department of Agriculture (USDA), announced that the Department has issued a request for proposal to produce a departmental-wide electronic information system, usable by each of the Department's subordinate agencies, which will communicate perishable data about the production and marketing of food products to the public.

More global implications of changes in information transfer were addressed in presentations by Dr. Louis Tornatzky, section head, Productivity Improvement Research at the National Science Foundation (NSF); Dr. Michael L. Dertouzos, Director of the Laboratory for Computer Science at the Massachusetts Institute of Technology (MIT); and, finally, by speakers at a seminar sponsored by the Computer and Business Equipment Manufacturers Association (CBEMA).

Dr. Tornatzky stated in part, "* * * increasing access to Government information in electronic format is a highly desirable public goal, whether accomplished through the Federal Depository Library System, or through another vehicle." He also stated, "The core of technological innovation is knowledge transfer and transformation. * * * Studies of technological innovation suggest that it may be years or decades between new basic science research findings, and the successful development of an innovative product or industrial process that derives from those results. This time lag is not all attributable to the sheer amount of effort necessary to develop a marketable product; lags and delays are often the result of ignorance about important and pertinent research findings. * * * Successful information transfer is heavily contingent upon the nature of the transfer medium. * * * [E]lectronic systems have storage and retrieval capabilities of such scope that they have qualitatively changed our view of what a 'library' is comprised."

Dr. Dertouzos said, "The United States is experiencing an information revolution that will affect our society more profoundly than the industrial revolution. * * * The growing dependence of U.S. society and the economy on information products and services will have an impact on the future role of libraries, including depository libraries." In response to a question, Dr. Dertouzos indicated that in his view electronic information transfer systems would be in general use nationally in approximately 5 years. He stated that once 10 million microcomputers were in place in a mix of homes, school rooms, workplaces, and laboratories that an avalanche effect would occur, and the use of electronic networks for information transfer would become general among the business, academic, and research communities throughout the country.

An overview on electronic information systems was organized by the Computer and Business Equipment Manufacturers Association. At this meeting Dr. Paul A. Strassman, vice president, Information Products Group, Xerox Corp., stated that with the evolution of data storage on a variety of disks and tapes, we needed to look at information differently. He indicated that information would no longer be physically arranged by discipline-oriented classification schemes used by traditional libraries to arrange books on shelves.[20]

The Ad Hoc Committee attended the "Federal Depository Libraries Workshop," conducted by the Office of Technology Assessment, to summarize the issues addressed during earlier meetings.[21] The workshop was composed of experts invited to speak on various subjects which the Ad Hoc Committee had explored during its previous sessions.

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[20] Please refer to appendix 2 for summaries of all presentations.

Major Issues or Themes in Transfer of Electronic Data to Depository Libraries

Electronic systems produced by the Federal Government include bibliographic, statistical, and other information. Some of the systems are made available to the public through arrangements with non-Federal institutions such as agricultural experiment stations at land grant universities, medical schools, and designated libraries. As the Ad Hoc Committee examined the question of making computerized data bases available through the Congressional Federal Depository Library Program, the following issues were addressed. The Ad Hoc Committee discussed the legislative or regulatory changes that might be necessary to permit electronic distribution to depository libraries. In light of the present efforts of the Joint Committee on Printing to revise their printing and binding regulations to clarify the definition of printing, however, the committee chose not to make specific recommendations.

A. Which of the electronically accessible Government-produced publications have librarians indicated are of use to the citizens they serve?

B. What networks (library and commercial) do depository libraries regularly access?

C. Could such networks and their subsystems be used to transmit Government publications electronically?

D. What are the costs and benefits to the libraries in using an electronic format?

E. How will electronic publications affect libraries' information delivery systems?

F. How will scientists, engineers, the business community, and other citizens be accessing publications electronically in 1995?

G. What is the outlook for high resolution graphics and text in a single integrated data base?

H. What are the costs for the distribution of publications electronically to members of the depository library system?

I. What options are available for placing equipment in depository libraries?

J. What options are there for providing depository libraries with access to electronic data bases?

Question A.—*Which of the electronically accessible Government-produced publications have librarians indicated are of use to the citizens they serve?*

Depository librarians' recommendations about data bases vary according to the information needs of the constituencies they serve.[22]

Question B.—*What networks (libraries and commercial) do depository libraries regularly access?*

The most common type of networks accessed by depository libraries are the bibliographic utilities, such as Online Computer Library Center (OCLC) (59 percent), Regional Library Information Network (RLIN) (8.6 percent), and Washington Library Network (WLN) (3.3 percent). 73.4 percent of the survey respondents belonged to at least one bibliographic utility; 5.5 percent belonged to two or more. More than 86 percent of the libraries responding to the questionnaire use at least one telecommunication service including the Federal telecommunication system. These percentages indicate that a number of libraries are experienced in the use of telecommunications, and that communicating terminals and similar equipment, which could be used by depository libraries to connect to a network, are already in place.

Question C.—*Could such networks and their subsystems be used to transmit Government publications electronically?*

One method of transmitting this data from Government to citizen might be through the use of existing bibliographic utilities, since a significant percentage of the depository libraries are already members. They include such entities as OCLC, RLIN, WLN. Again, from the questionnaire, it was learned that 74 percent of the participating depository libraries belong to at least one cooperative technical processing service.

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[21] See letter sent to Office of Technology Assessment and Congressional Research Service, which includes enumerated questions to be addressed during the workshop and presentations, in appendix 3, p. 46.

[22] See appendix 6, survey of depository libraries, question F, part 1, pp. 74–95.

Another alternative would be the use of the existing commercial data base vendors, such as BRS, Lockheed, Mead Data Central, SDC, and West Publishing, since the survey indicates that 66.8 percent of the depositories access at least one commercially available data base. A third alternative would be direct access to governmental data bases, such as Medline, either through FTS or commercial telecommunications systems.

This participation by depositories in a network indicates that the library staff has effective working knowledge and experience as a member of a network. Network membership would indicate the presence of some hardware which could be used. The willingness of bibliographic utilities and data base vendors to participate in the transfer of information from the U.S. Government to depository libraries would have to be determined. It would also be necessary to determine the compatibility of the software and hardware of these potential distributors with the Government data bases to be offered to the depository libraries.

Question D.—*What are the costs and benefits to the libraries in using an electronic format?*

No cost-benefit study was conducted by the Ad Hoc Committee. However, the presentation by Mr. Joseph McClane and Ms. Sarah Kadec contains some cost figures covering the operation of the Depository Library Program. Some indication of relative costs of paper versus electronic information appears in the statement by Mr. Stan W. Prochaska of the U.S. Department of Agriculture.[23]

The following should be included in a detailed cost-benefit study:

1. Cost to the originating agency to produce the publication;
2. Cost to the originating agency to transmit/deliver the publication to GPO;
3. Cost to GPO to receive the publication, including the cost of cataloging;
4. Cost to the agency, GPO, and/or the depositories to store the publication (this would include on-line storage if the document is offered in that form);
5. Cost to the originating agency and/or GPO to transmit/ship the publication to the depositories (this would include the cost to duplicate the publication if distribution is to be on disk or tape);
6. Cost to the originating agency and/or GPO and the depository to update the publication;
7. Cost to make the document available to the general public;
8. Cost to the originating agency and/or GPO to archive the various versions of the document.

A detailed cost-benefit study was beyond the resources of the Ad Hoc Committee. However, inferences may be drawn that the cost of distribution of the larger publications in electronic format rather than paper copy would save substantial annual printing and postage charges, but would entail other costs. Smaller publications, that do not include graphics, might provide more immediate savings.

The societal benefits were supported by Dr. Louis Tornatzky of the National Science Foundation in his testimony with the statement, " * * * increasing access to Government information in electronic format is a highly desirable public goal. * * * For a relatively modest public investment the increment in improving the innovation process could be considerable."[24]

If libraries are to remain effective storers and disseminators of information, they must acquire a full range of electronic capabilities. If citizens are to retain their right to Government information, data must be provided at no direct cost to them, in electronic format through the depository library system.

Question E.—*How will electronic publications affect libraries' information delivery systems?*

Libraries' information delivery systems will depend upon the way the libraries receive the information. If the information is provided on-line to the library via a telecommunication system from a central computer, that information will become immediately available to the user. The information can be accessed via a terminal, downloaded onto a tape, disk, or into the library's computer, or printed on paper or microform. If the information is distributed via the mails, on disk or tape, it will not be available as quickly, but the library will avoid telecommunications costs and will have physical control of the information. Whichever method of distribution is chosen, the library will have to provide a means for the user to access and reproduce the information.

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[23] See appendix 2 for presentations by Stan W. Prochaska, Joseph C. McClane, and Sarah Thomas Kadec, p. 25 and 39.

[24] See appendix 2 for presentation by Louis Tornatzky, p. 24.

Question F.—*How will scientists, engineers, the business community and other citizens be accessing publications electronically in 1995?*

Use of electronically prepared, stored and accessed information will be widespread. The availability of computer terminals, communicating word processors and similar equipment in offices will make electronic access a commonplace occurrence at work, and the popularity of the home computer will mean that there will also be significant home usage. Libraries will increasingly offer electronic information access in conjunction with more traditional services. Library users will be able to submit remote inquiries (from home or office) and thus use the library as an intermediary or gatekeeper to a wide range of electronic information sources. As user-friendly systems continue to be developed, it will be increasingly feasible for citizens to access data bases directly without a gatekeeper, but the proliferation of data bases will probably make the role of the library critical in the identification of available resources, assistance in utilizing infrequently used data bases, and similar facilitating services. A number of libraries, such as the Pikes Peak Library, have created data bases, which are installed in the library's computer. The information is available for access by the users who have home computers.[25]

Question G.—*What is the outlook for high resolution graphics in a single integrated data base?*

Information was presented to the committee concerning the unique storage, retrieval, and printing requirements for high resolution graphics. Such matters as pixels, compression ratios, facsimile transmission, halftone, structured graphics and unstructured graphics must be addressed. Graphics are an inherent part of the literature of science and technology. For example, the American Chemical Society has one data base for its on-line primary journal project, and another totally separate data base for its on-line organic chemical substructures. Dr. Lorrin Garson, in his comments before the Ad Hoc Committee, indicated that ACS fully recognizes the need to have language and graphics in a common data base. He also indicated that developing computer technology would solve this problem in the not-too-distant future.

Mr. Peter W. Preksto, Jr., of the INTRAN Corp. presented a summary of the state of the art of high resolution graphics.[26] Mr. Preksto indicated that graphics are considerably less straightforward than textual files, and that there are two kinds of graphics: structured and unstructured, both of which can be transmitted efficiently. Graphic files also tend to be large compared to text files, and each picture or illustration usually contains a header which describes not only the subject matter, but also the instructions for printing. Although texts and graphics are different data types, both can coexist on the same device. What is needed is a way to index the files so that they can be found when needed and a technique to merge them into a logical file when it is time to display or to print out a document that calls for both types of files.

In summary, Mr. Preksto feels that these files will be interchangeable in the future, and that very little problem shall result once new standards for encoding text and graphics shall emerge in a few years. He stated that it will be some time before inexpensive equipment will be available to access these types of files, in part because of the present lack of standardization.

Question H.—*What are the costs for the distribution of electronic publications to members of the depository library system?*

The cost for the production of traditionally printed Government publications has risen sharply, in both absolute and relative terms during the past 20 years.[27] All the factors involved in the typesetting, platemaking, printing, binding, postage, distribution, and handling have risen greatly and show no signs of peaking. Materials, labor, space, and warehousing are also expensive. At the same time, Federal agency budgets for printing and binding have either been cut or have not been adjusted for such factors. As a consequence, the number of agency publications has decreased. Many publications once issued in paper format are only available in microform or on tape, disk or on-line, or are not issued at all.[28]

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[25] See appendix 2 for presentation by Kenneth E. Dowlin, p. 36.

[26] See appendix 3 for the summary of Mr. Preksto's speech, p. 50.

[27] See appropriations hearings held by House and Senate Appropriation Committees, Subcommittees on Legislative Branch for the years 1975–84.

By contrast, cost of computer hardware and electronic data bases have dramatically decreased. The factors causing such decreases are threefold:

1. The maturing electronic chip industry;
2. Increased efficiencies in mass memory, peripheral storage devices, and media;
3. The availability of electronic data as: (a) A byproduct of applying computer technology to the printing process, and (b) a byproduct of an agency's prescribed activities (i.e. data collection, information dissemination, etc.)

Nonetheless, the cost of hardware, software, and operations, including telecommunications, for the dissemination of Government data in electronic format will have to be met. The distribution of those costs will depend in part on the capabilities and responsibilities of the institutions involved in the production, transfer, and receipt of the information. Payment of those costs may depend in large measure on what is determined to be in the national interest. Costs could be assessed among at least six groups.

1. The agencies producing the information selected for distribution.
2. The Government Printing Office or any other "Federal distribution agency".
3. The Congress, through direct appropriations to support the publishing agencies and/or the distributing agencies.
4. The depository libraries receiving the information.
5. Users of the information, including both individual citizens and institutions.
6. Donations from foundations, businesses, or other organizations.

Primary areas of cost include: data communications and related network costs; loading and updating data bases in or on recipient computers; software for the use of the data; computers, storage devices, and terminals; communications computers for bearing the access load; and in some cases "value added" to some data bases to make them useful to the public. Some of these factors represent incremental costs to existing capabilities; others represent capital costs; still others represent ongoing operational and administrative costs.

Question I.—*What options are available for placing equipment in depository libraries?*

After considerable discussion, the Committee suggests these possible options for placing equipment in participating depository libraries:

1. Depository libraries could procure their own computer equipment, as they have done for use with paper and microform publications.
2. The U.S. Government could provide funds to cover the cost of equipment, either through a special appropriation or through the normal GPO appropriations for the operation of the Depository Library Program.
3. The U.S. Government could provide funds on a matching grant basis, thus sharing the cost of acquiring equipment with the depository libraries
4. Foundations, businesses, and others could be asked to provide grants, either by the depositories or organizations acting on their behalf.
5. Equipment manufacturers could be asked to provide equipment, either at a discount due to the volume of purchases or as gifts, possibly stimulated by tax writeoffs.
6. State and local governments could be asked to support equipment purchases with special appropriations, bonds, or similar measures, particularly since a large number of the depositories are public institutions.

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[28] See "List of Government Publications Terminated and Consolidated by Agency" published by the Office of Management and Budget in October 1982. For sale by Superintendent of Documents, GPO S/N 041-001-00261-8 paper, 041-001-00260-0 microfiche, and "Who's Doing What in Government Data Bases," compiled by Diane Garner and Diane Smith, Pennsylvania State University, University Park, PA. 1984.

7. Or any combination of the above.

In any case, standards must be adopted and promulgated so that whatever equipment is procured will be compatible with the distribution media and mechanisms that will be used.

Question J.—*What options are there for providing depository libraries with access to electronic data bases?*

The Committee identified a number of options for providing depository libraries with access to electronic data bases.

1. Continue the status quo by which libraries could continue to access data bases on their own as they need them and can afford them.
2. Establish a program for providing access to data bases to those depository libraries interested in participating in the program. Possible programs are:
    a. To establish a central on-line data base of information accessed by all libraries (e.g., Patent system).
    b. To provide information on magnetic tapes or other electronic media directly to all libraries (similar to present paper and microfiche system).
    c. To establish regional data centers organized around subject interests or geographic areas (e.g., map, scientific and technical, health and medical, legislative, and regulatory etc.) The selective depositories would obtain access through the appropriate regional center.
    d. To provide an intelligent gateway,[29] which would allow depositories to access a number of different data bases with a common, user-friendly interface (e.g., CSIN and LLNL). The GPO would then be responsible for interfacing with the information providers on the one hand and the information users (depositories) on the other hand, but would not necessarily have to operate a data bank.
    e. To utilize existing bibliographic utilities and/or commercial data base distributors to provide on-line access to depositories, under Government contract. NTIS presently distributes and obtains on-line access to its own data base through such an arrangement. The Government would pay the fees rather than the depository libraries, and the Government might pay to have some data bases offered that are not otherwise commercially viable.
    f. A combination of the above.

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[29] Gateway concept was presented by Viktor E. Hampel at the Department of Energy. The concept involves a super computer intermediary, which acts as a gateway permitting access to a wide variety of users who are unfamiliar with general software and availability of certain data bases.

CHAPTER II.—RECOMMENDATIONS

The Ad Hoc Committee adopted, on February 2, 1984, this resolution:

"The Committee unanimously supports the principle that the Federal Government should provide access to Federal information, as defined in 44 U.S.C. § 1901, in electronic form through the depository libraries system. Recognizing that it is technologically feasible to provide such access to electronic information, the Committee recommends that the economic feasibility be investigated through pilot projects."

Proposed Pilot Projects

The Ad Hoc Committee, thus, recommends that the Joint Committee on Printing and the Superintendent of Documents together initiate a pilot program, through which depository libraries could access Federal information electronically and provide that information to the general public, free of charge. To do this it is necessary to develop a proposal for supporting the pilot project(s) and to have it approved and funded. Technical standards and an administrative organization to staff the projects must be selected and approved. The project should test various methods of disseminating the publications; obviously some publications are more appropriate on-line than on video-disk.

The Ad Hoc Committee, further recommends that this Committee, or a similarly constituted body continue to exist and function as an advisory group to review the pilot project proposals and results and to make recommendations for further action.

Certain criteria must be established for such pilot projects, particularly in the areas of the selection of publications and the planning and evaluation of each pilot project. It was decided that the following criteria should be used in the selection, planning, and evaluation of projects.

1. Criteria for the selection of pilot project(s), i.e., the identification of publications and the mode of access.
2. Criteria for the selection of libraries for the pilot project(s).
3. Criteria for the monitoring and evaluating of the pilot program.
4. Criteria for the study of the impact on the user community.
5. Criteria for the evaluation of costs.

Criteria for Selecting Publications

In the selection of publications for inclusion in pilot project(s), a few factors are of primary importance:

- Publications must be identified that have public demand and are useful in electronic format;
- Federal publishing agencies and distributors providing these publications and willing to cooperate must be selected.

It is also important that the parties involved must be willing to develop the pilot project into a full scale program if it is proven worthwhile. Some agencies are actively promoting electronic access to their publications.

The identification of publications to be included in pilot programs would not be difficult. For example, the PTO CASSIS system is being accessed free by 50 Federal depositories, which are also patent depositories. An evaluation of the effectiveness of this system would be useful. Similarly CSIN is operating as a model of an intelligent gateway; funding could be used to tie some depositories into that system. The Bureau of the Census provides census tapes free of charge to existing computer centers (generally at universities or state agencies), which in return provide access to citizens free or for a charge.

Additionally, the Depository Library Survey, part F, question 1 gives a number of tables listing 44 publications, which are available electronically either from the Government or through a commercial vendor. The librarians indicated which of the 44 publications they are currently accessing and in what format, paper, microfiche, or electronic.

In the order of preference the following list shows the top 10 publications currently being accessed electronically by the librarians.

1. ERIC
2. L.C. MARC tapes
3. Medline
4. GPO Monthly Catalog
5. NTIS
6. Agricola
7. Child Abuse and Neglect
8. Federal Register
9. Health Planning & Administration
10. National Criminal Justice Reference Center

The librarians also indicated the publications, currently electronically accessible, which they are not now accessing, but would like to access electronically now or in the future, again in order of preference.

1. U.S. Public Laws
2. United States Code
3. Code of Federal Regulations
4. U.S. Presidential Executive orders
5. GPO Sales Reference File
6. Federal Register
7. GPO Monthly Catalog
8. BLS Consumer Price Index
9. BLS Labor Statistics
10. National Criminal Justice Reference Center

The following list in the order of preference shows the top 10 information sources, not now available to the libraries electronically, which the librarians would like to access.

1. Congressional Record
2. Census
3. Patents
4. NASA RECON
5. U.S. Reports
6. Fish & Wildlife Survey
7. IRS
8. OSHA
9. LEGIS
10. SCORPIO [30]

Criteria for Selecting Libraries

It was agreed that libraries should be chosen on a fair basis, taking into consideration such factors as geographical location, population served, membership in a network, type of collection, willingness to participate, willingness to serve all citizens and the ability of the library to participate in a pilot project. Evaluation of the ability to participate will include availability of equipment, staff support, willingness to prepare reports and maintain statistics, etc.

It was also agreed that the libraries might be grouped into areas of subject specialization, such as law, agriculture, maps, or science and technology as a means of deciding the pilot project in which they might wish to participate. It is assumed that many of the publications considered for a pilot would fit into an area of specialization.

In order to be fair to all libraries wishing to participate in the program, it might be necessary to prepare an additional survey outlining pilot project requirements to ascertain willingness and ability to participate.

Monitoring the Pilot Program

In order to determine the quality and value of the pilot, a strong monitoring program is highly recommended by the Ad Hoc Committee. Standard methods of monitoring pilot projects should be employed. This oversight includes status reports by the project manager, the participating libraries, and an evaluation team; evaluation of services by the users; and a final evaluation of the project by the Ad Hoc Committee, or alternate advisory group.

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[30] See list at end of Appendix 4 for description of publications, p. 57. See also list of Acronyms and Initialisms in appendix 11, p. 117.

The Committee suggests that particular attention be paid to the following:

1. Is there a need for new organizational relationships among the parties involved in the depository program, i.e., among the government distributors and publishers, the library, the private sector and the end user. For example, are gateways or data base management intermediaries at regional levels required for the maintenance of data traffic management and/or assistance to and from centralized or de-centralized data bases? Can the depository library system fit into other networking structures? What kinds of changes will occur in the local library as end users access data in electronic format?

2. In monitoring the pilot programs it will also be necessary to study the potential for new kinds of cooperative efforts between the Federal Government and the private sector in increasing the effectiveness of the publication delivery system through electronics.

3. What are the responsibilities and requirements of the libraries? What are the needs of the patrons? How many terminals are needed for good service? How many hours a day do the libraries need to provide electronic access to publications? How much and what kind of training do the librarians and users need? Because it is necessary to tailor information specifically for each user, how many requests can be filled in a working day?

The Ad Hoc Committee believes that a library wishing to receive electronic services provided by the Government should be held accountable for service to the citizens. However, much input is needed from a variety of groups and individuals on what constitutes good service. These groups include professional library associations, the Depository Library Council, the Government Printing Office, Federal publishing agencies, Congress, individual libraries, and users.

Impact on Users

No study of the pilot projects can be complete unless the individual users are polled and given an opportunity to evaluate the usefulness of the new services. The benefits to the user must be measured as part of a balanced study. The Ad Hoc Committee believes that the new technology provides certain benefits, but may raise other obstacles. Having access to information in electronic format may limit the user's access to the information, if the user is unfamiliar with such systems. What kind of training will the user need? Will having access to information in electronic format increase the usefulness of the information to the users? When comparing former methods used by researchers in obtaining data, as against the new electronic method, will electronic access increase the user's productivity? Does it shorten the amount of time needed to access data? Does it eliminate or create unnecessary information? Is the information more current, than that provided under more traditional systems? Is there a greater diversity of information? Is the information of a better quality (e.g., more accurate)?

Pilot Project(s) Costs

The following chart outlines the costs that must be evaluated to determine the effectiveness of a pilot project. Cost must be compared between traditional and new systems.

PILOT PROJECTS

COSTS

	TEXTUAL		ELECTRONIC		
	Paper	Microform	(raw data on tape, disc, etc)	Disk, tape	On-line
Production of copies by publisher	Yes	Yes	Yes	Yes	N/A
Storage: Space	Cost/linear foot including shelving	Cost/linear foot including cabinets	Cost/linear foot including tape readers, disk readers	Cost/linear foot including tape readers, disk readers	Cost/linear foot N/A
Environment	Some controls	Some controls	Strong controls	Strong controls	N/A
Distribution Costs	Postage/UPS Handling	Postage/UPS Handling	Postage/UPS Handling	Postage/UPS Handling	Telecommunication charges
Access Charges (non-staff)	Indexes	Indexes	Tech. Documen. Retrieval software Analysis software	Tech. Documen. Retrieval software	Technical Documen. Retrieval software
Equipment	Copying machine	Reader/Printer	Computer with peripherals terminals printer	Tape: Computer Disk: reader/print terminals printer	Terminals printer
Staff:					
Record keeping	Yes	Yes	Possibly	Possibly	N/A
Disposition (selectives only)	Yes	Yes	Yes	Yes	Yes
Reference serv.	Yes	Yes	Yes	Yes	Yes
Bibliographic control	Yes	Yes	Yes	Yes	Yes
Training	Yes	Yes	Yes	Yes	Yes
Preservation	Binding Deacidification	Air conditioning Acid free materials	Back-up copies Routine recopying Cleaning of media Maintenance of equipment	Back-up copies Routine recopying Cleaning of media Maintenance of equipment	Back-up copies Routine recopying Cleaning of media Maintenance of equipment

Conclusion

In summary, the Ad Hoc Committee believes that the pilot program will demonstrate the value and effectiveness of providing Government information in electronic format through the depository library system. The work of the Committee was to provide options to the Members of Congress for their consideration in establishing policy. The pilots will provide substantial documentation on which to base their decisions.

The Ad Hoc Committee feels honored and privileged to have been asked to serve the Congress and the reading public.

APPENDIX 1

SCHEDULE OF SPEAKERS AND PRESENTATIONS

AD HOC COMMITTEE ON DEPOSITORY LIBRARY ACCESS TO FEDERAL AUTOMATED DATA BASES

Joint Committee on Printing

U.S. Congress

Schedule

May 11, 1983—
David Fain.
Integrated Automation.
Berkeley, CA.
Subject: Optical digital storage technology.

May 12, 1983—
William S. Lawson.
Administrator for Documentation.
U.S. Patent and Trademark Office, Washington, DC.
Subject: Classification and Search Support Information System, Patents on-line complete text, Mead Data Central project under contract with the U.S. Patent and Trademark Office.

June 15, 1983—
Dr. Lorrin Garson.
American Chemical Society, Washington, DC.
Subject: Primary Journal Project—on-line access to the complete texts of 16 ACS journals with complete text searching and print on-demand capability.

June 16, 1983—
James H. McCain.
Geoview, Alexandria, VA.
Subject: Maps on videodisk.

Gary W. North.
Assistant Division Chief for Information and Data Services.
National Mapping Division.
U.S. Geological Survey, Reston, VA.
Subject: U.S. Geological Survey applications of computer technology to map information distribution.

July 27, 1983—
Dr. Louis Tornatzky.
Section Head.
Productivity Improvement Research.
National Science Foundation, Washington, DC.
Subject: Computer applications to technological information transfer.

Dr. Thomas J. Allen.
Organizational Studies.
Sloan School of Management.
Massachusetts Institute of Technology, Cambridge, MA.
Subject: Mechanics of technological information transfer and analysis of the types of information required in innovation.

July 29, 1983—
Joseph C. McClane and Sarah Thomas Kadec.
Library Programs Service.
U.S. GPO, Alexandria, VA.
Subject: Tour of Supt/Doc Library.

Kenyon C. Rosenberg.
National Technical Information Service.
Springfield, VA.
Subject: Visit to NTIS.

September 21, 1983—
Michael G. Garland.
Chief, Data Users Services Division.
Bureau of the Census.
Department of Commerce, Washington, DC.
Subject: State Data Center Program—distribution of population, housing and economic censuses data exclusively in electronic format.

H. Gerald McQuire.
President.
ISA Incorporated.
Subject: GESCAN2.

September 22, 1983—
Kent Smith, Deputy Director.
National Library of Medicine, Bethesda, MD.
Subject: Electronic systems at NLM.
(Paper by George R. Thoma.)

October 26, 1983—

Harry De Maio.
IBM, Purchase, NY.
Subject: Overview on electronic information systems: display, graphics, image, text, telecommunications, data base management systems.
(Papers by R.A. Myers and Paul A. Strassman.)

October 27, 1983—

Nancy Cline.
Chief, Bibliographic Resources Department.
University Libraries.
The Pennsylvania State University,
State College, PA.

Jeanne Isacco.
Online Computer Library Center, Inc., Ohio.
(Chair of Depository Library Council to the Public Printer.)
Subject: Libraries and electronic services.

Dr. Sidney Siegal.
Administrator.
Chemical Substances Information Network.
Washington, DC.
Subject: CSIN.

November 16, 1983—

Kenneth E. Dowlin.
Director of Pikes Peak Library District.
Colorado Springs, CO.
Subject: Libraries and electronic services.

Dr. Michael L. Dertouzos.
Director, Laboratory for Computer Science.
Massachusetts Institute of Technology.
Cambridge, MA.
Subject: Future directions of technology.

November 17, 1983—

Dr. Toni Carbo Bearman.
National Commission on Libraries and Information Science.
Washington, DC.
Subject: Libraries and electronic information systems and services—a national overview.

Donald King.
President, King Research.
Rockville, MD.
Subject: Value of Information.

Stan W. Prochaska.
Deputy Director of Current Information.
Department of Agriculture.
Beltsville, MD.

Sam Waters.
Associate Director.
National Agriculture Library.

Eugene Farkas.
National Agriculture Library.

David Hoyt.
Leader Training and Education.
National Agriculture Library.

Ovid Bay.
Director of Information.
USDA Extension Service.
Subject: Electronic systems at USDA.

December 14, 1983—

Joseph G. Coyne.
Department of Energy Technical Information Management Program, Oak Ridge, TN.
Subject: Products, services and historical overview of the DOE Technical Information Center.
(Summary of presentation by William M. Vaden.)

Viktor E. Hampel.
Project Leader Technical Information System.
U.S., DOE Lawrence Livermore National Laboratory.
Berkley, CA.
Subject: DOE Integrated Information Network Planning.

December 15, 1983—

Thomas Kleis.
Staff Director.

Anthony Zagami.
General Counsel,
U.S. Congress, Joint Committee on Printing.
Washington, DC.
Subject: JCP revised regulations and role in new technology.

APPENDIX 2

SUMMARIES OF SPEAKERS' PRESENTATIONS

NOTE: The Congressional Research Service was asked to summarize presentations made by speakers during the briefings and the OTA workshop. Nancy Miller, Analyst in Information Science and Technology, summarized the reports of June 15, July 27, September 21, October 27, November 17, December 14, 15. Michael Davey, Analyst in Science and Technology, summarized the OTA workshop. Other presentations were summarized by the presenters.

Optical Digital Storage Technology

Presented by: David Fain
Integrated Automation
May 11, 1983

Optical digital storage technology has made rapid advances in the past several years and is now being accepted as a viable alternative for mass data storage. Memories based on this technology combine extremely large data storage capacities with long data life, low cost, and short access times; features which are interesting in several important applications. The uses of optical data storage fall into two general categories; the storage of computer data and the storage of digital images. It is the second category which interests the Joint Committee in the main.

The technical team at Integrated Automation has been developing and installing systems around the world since the mid-1970's that have provided users with images of documents instead of the original paper. In general, these systems have included the optical scanning of documents, some form of mass storage, high resolution soft displays, and electronic printers, all under control of a computer. The earliest systems employed analog storage of the document images using floppy magnetic media of our own design. As digital components, mainly low cost RAM devices became available, we started to install systems in which all image handling was in a digital format. Mass storage of a digital nature was still impractical, although digital magnetic image storage was used to buffer and format image data. In these systems, microfiche, digitally produced in raster modified COM units and also photographically produced with step and repeat cameras was installed in automatic retrieval modules, which enabled us to store millions of pages online.

Hard copy output from these systems utilized several types of commercially available electrostatic printers, especially those incorporating a laser as the means of producing a raster image on the electrostatic drum. This type of output device for production of hard copy still remains as the best solution and is being supplied to our customers today.

With the availability of the optical laser disk storage equipment, first from Thomson CFS in France, then Optimem and now from several other manufacturers, it became evident that mass storage of document images in subsystems based on this new technology would have many advantages over prior storage methods. We have already delivered systems to our clients using optical disk storage and the users are finding that the anticipated benefits of this technology are being realized.

The compact and rugged nature of optical laser disks allows them to be used in applications similar to those where microform media was previously used. Just as documents have been inexpensively disseminated by mailing microfiche to user populations who have suitable reading equipment, optical disks may be replicated and mailed to large numbers of users who have the necessary players and display devices. Alternatively, image data may be retained in a central file on optical disks and disseminated world-wide to system subscribers through electronic telecommunication systems. Of course, this feature has been important in prior microform based image systems.

The question arises as to the wisdom of placing controls on the use of optical disk storage in government printing applications and whether or not any controls would be enforceable. With regard to the issue of cost reduction through standardization, there is an additional question involving the timing of standards in an emerging technological area, and whether or not early application of standards might inhibit technical improvements and alternative methods having significant but as yet unforeseen benefits.

Optical disk read/write units will be selling for under $12,000 in 1985 and some units may sell for less than half this amount. Most of the immediate applications of these disk drivers will be to augment magnetic tape storage for large computers and as a general purpose memory peripheral for computers in general. It is only when combined with image scanning devices, displays, digital video switching hardware/software and hard copy output devices that optical disk memories can be construed to be part of an image based printing system. Purchase orders placed for optical disk units will not be easily monitored without considerable details regarding use and purpose, other items of equipment which will be interconnected and future application potential if control of printing applications is contemplated.

Since any image based system, regardless of mass storage methods, can use almost any raster type of printer (or a printer which is readily converted to raster operation) such as general purpose dot matrix printers and most laser type electrostatic copiers as its hard copy output device, any attempt to monitor the purchase of these printers and office copiers for printing applications will encounter similar difficulties. We have here a situation where the hardware being purchased is not the issue; the intended use either at present or at some future time might fall under the Committee's jurisdiction.

The replication and dissemination of prerecorded, read-only disks is another matter, directly analogous to book printing. It is likely that the Committee will find this an interesting area in which cost savings and abuse reduction can be accomplished through appropriate controls.

Where the data is to be stored at a central location and disseminated through telecommunication techniques, whether phone lines, fiber optic cables, microwave networks, satellite communications or other method, image data is indistinguishable from computer data and the method for central data storage is relatively unimportant. Current methods of storage include banks of magnetic computer disks, microform media and optical laser disks. Future economic consideration will probably lead to greater use of optical disk storage unless redtape difficulties lead data base providers to select alternative methods. The implication here is that control of laser disk equipment in government applications through mandatory approval procedures will be circumvented. Again, it is the application, not the hardware that is relevant.

Turning now to the advantages of standards to be imposed on the procurement of optical disk equipment by Government agencies for printing applications, we see the question as one of timing only. The cost saving implication of procuring an item of general interest to a large number of Government users on a standardized basis is clearly positive. However, if the item is technologically in its infancy, with no manufacturer beyond the prototype stage of product introduction and with several diverse and significantly different technologies represented by these prototypes, it is too early to select the standards for future procurements. If standards are prematurely imposed, especially by a customer as large as the Federal Government, current R&D activities in optical disk technology may be curtailed in favor of early introduction of products meeting the standards, with an overall likelihood that new and better technology, with improved cost effectiveness, will be delayed for several years. Standard setting should wait until some degree of user experience is available, at least, and the selection of specifications can be based on real-world inputs rather than the speculative concepts of equipment vendors and other experts.

The Joint Committee is interested in appropriate procurement controls and standards as applied to Government printing and to new technology for printing. Procurement cost savings, avoidance of uneconomical duplication and prevention of information control abuses are important goals. The Committee's interest in fairness and hearing all sides of the issue is exemplified by my invitation to speak to the members. I hope that my remarks will be useful and helpful in the Committee's decisions.

Patent and Trademark Office Automation and the Patent Depository Library Program

Presentation Submitted by
William S. Lawson, Administrator for Documentation
Patent and Trademark Office
May 12, 1983—Washington, DC

Background

Patents, as incentives for innovation, are well established in the U.S. free-enterprise system. Often overlooked, however, is a second great benefit of the patent system: the enormous, continually expanding file of technology disclosed in the patents. This file includes more than 4.6 million distinct U.S. patents. These patents are classified and cross-referenced among the approximately 110,000 categories of technology that make up the U.S. Patent Classification system. Along with similarly categorized foreign patents and other technical publications, they make up a collection totaling more than 24 million documents.

Patent law requirements for a full disclosure of invention (which is then published as part of a patent grant) have resulted in a unique assemblage of technological information. Not only does the patent file embody the most comprehensive collection of technical information of its kind in the world, the information is inherently presented in such a manner that nearly every significant development in almost all technical fields flows in a natural time-series sequence—virtually welcoming monitoring, analysis and utilization.

Moreover, the patent file is dynamic. Increasing in size by half a million documents annually, it reflects the daily growth and change in technology. The U.S. Government spends millions of dollars each year in a continuing effort to maintain the currency of our patent search file. Yet these expenditures are trivial in comparison to the investments in research and development that give rise to the hundreds of thousands of new technological disclosures the file receives each year. But this enormous library of information obviously is of limited value to the economy unless it can be widely accessed and used by the public.

For too long there has been little effort to maximize the potential benefits available from this steady, abundant flow of very expensively generated information—although studies in both England and the United States have shown that the large bulk of that information is not available from any other source.

A Commitment

The mission of the patent system, as stated in the U.S. Constitution is, "* * * To promote the progress of science and the useful arts * * *." That can only be achieved through the diffusion, transfer, and utilization of the technology disclosed in patents. The Patent and Trademark Office is committed to attain that end both through its own efforts and by seeking greater involvement by the private sector and by state and local government. Our intent is to tap the wealth of technological information in the patent file and put it to use more effectively in support of national goals.

Patent Depository Libraries

The complete, categorized patent file presently exists only at the Patent and Trademark Office. To use that file, individuals—inventors, entrepreneurs, small business persons—must come to Washington or hire a professional patent searcher. There is, however, a growing network of public and university libraries, located throughout the country, which maintain patent collections at negligible cost to the Federal Government. These collections, with one partial exception, are not categorized. They are in numeric sequence and difficult to use. Even so, the libraries report steady and substantial use of their patent collections by a wide cross section of the public.

These "Patent Depository Libraries" (PDL's) have been so designated by the Commissioner of Patents and Trademarks under the provisions of section 13 of title 35 of the United States Code. For a small fee, presently set by statute at $50 per year, PDL's receive, in either paper or microfilm, all patents being issued by the United States. To be designated a PDL, a library must have or pledge to obtain a minimum 20-year backfile patent collection, maintain a collection of certain patent-related materials (manuals, et cetera), provide the public with free access to the patents, and offer service on the use of the patent collection.

In addition to the patents, the PTO provides training for PDL personnel both in Washington and at regional workshops. Materials to assist in the use of their patent collections are provided, as well; and, when possible, arrangements are made with commercial suppliers of patent-related products and services, to offer special discounts to the libraries.

Also provided to the PDL's is a toll-free telephone hot line assistance service and free, online access to certain Patent and Trademark Office electronic data bases. This online system is called the Classification and Search Support Information System, or CASSIS.

CASSIS, which is specifically funded for PDL use by Congress, has proved to be a highly useful tool for the PDL's, enabling them to assist patent collection users far more effectively. The system is run for the PTO by a contractor and may be accessed by the PDL's using telecommunications services which require only a local phone call. The PDL's are responsible for the local phone costs and for providing a terminal. Present usage of the system is about 15,000 queries per month.

The Department of Commerce, parent agency for the Patent and Trademark Office, has established as a strategic planning objective, the strengthening and expansion of the PDL network; for it represents the nucleus of a nationwide system to assist in the diffusion and use of patented technology. This increased emphasis has resulted in the addition of 12 new PDL's in the last 18 months, bringing the total to over 50. As the PTO moves toward automation, the feasibility of some or all of the Patent Depository Libraries maturing into full-facility PTO satellite search centers will be increased. With full PTO automation, it is hoped this goal will be realized.

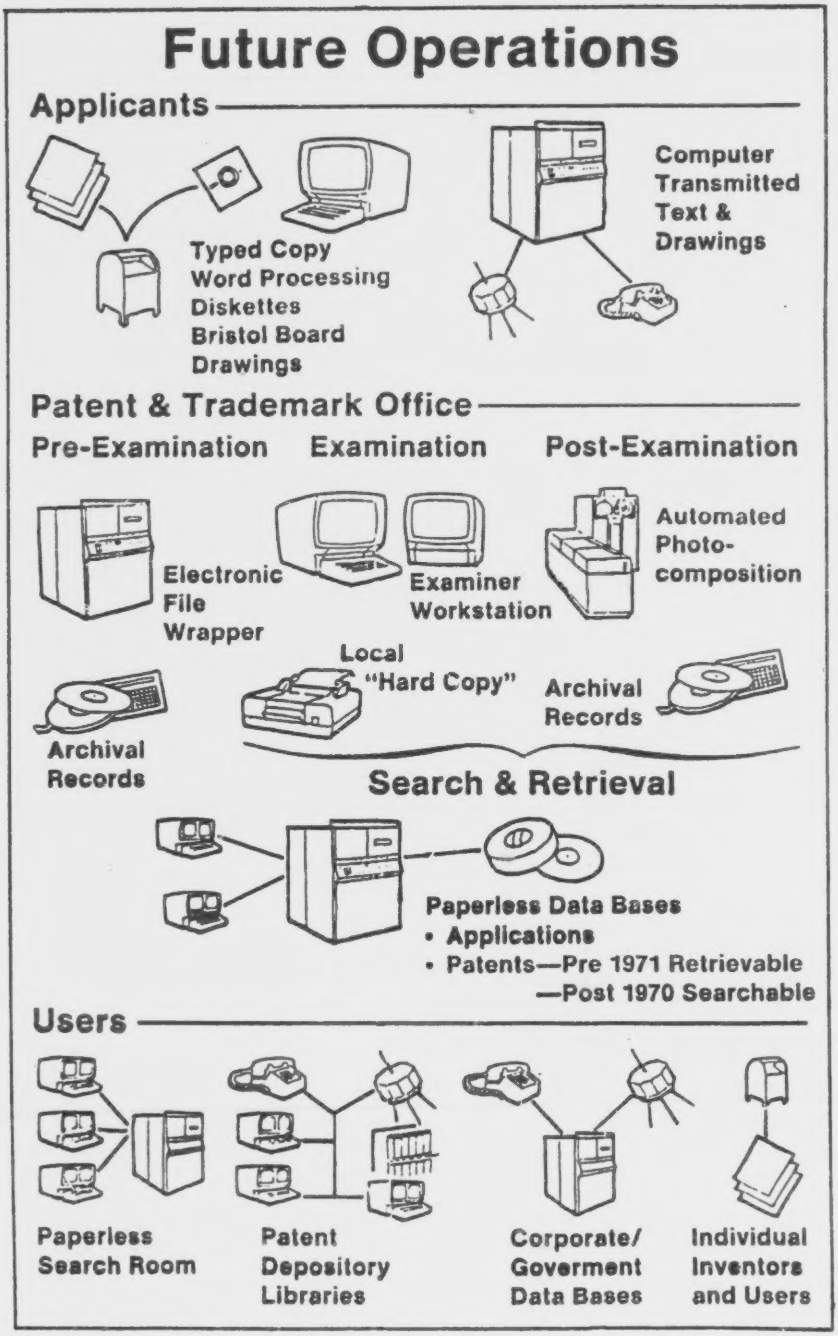
Patent and Trademark Automation

Although the Patent and Trademark Office operation is very "paper intensive", some of its functions have made extensive use of automation. Principal among these is the patent printing process. Starting in 1970, the PTO began conversion from "hot metal" to computer controlled, phototypesetting. This conversion not only saved many millions of dollars, but also resulted in the availability, by 1984, of almost 1 million U.S. patents in full-text encoded form.

This full-text data base, as well as ancillary (e.g., bibliographic), data bases have been made available to the private sectors. As a result, the bibliographic data are searchable on several commercial data bases. Recently, through a cooperative effort between the PTO and Mead Data Central, the full-text data base became commercially searchable on LEXPAT, which uses the well-known LEXIS software.

The advance of technology which permits these very large data bases to be made usefully available to the public, has created, as well, the opportunity for much wider application of automation to PTO operations. Consequently, and at the urgings of the Congress, an ambitious project to fully automate the Patent and Trademark Office has been launched.

Illustrated diagrammatically in figure 1, the project will result, by the end of this decade, in elimination of our vast, paper-based search files and application files. Using state-of-the-art technology, each examiner's work station will be able to search for, locate and call up the text and images of the documents needed.


Future Operations
Applicants
Typed Copy
Word Processing
Diskettes
Bristol Board
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Patent & Trademark Office
Pre-Examination
Examination
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Search & Retrieval
Paperless Data Bases
• Applications
• Patents—Pre 1971 Retrievable
—Post 1970 Searchable
Users
Paperless
Search Room
Patent
Depository
Libraries
Corporate/
Goverment
Data Bases
Individual
Inventors
and Users

Figure 1. PTO Automation Plans

In the later stages of the project, the public, in our public search room and in the Patent Depository Libraries, will be able to share in the benefits of these new systems.

Encouraging Private Sector Efforts

The PTO is aware, however, that only with substantial involvement of the private sector will fully effective transfer and utilization of the technology disclosed in patents be achieved. The resource of information constituted by the patent file is too large and diverse, the job of its dissemination too big for even a Government agency to assume. Consequently, we are moving with deliberation to assist and encourage such private sector involvement.

A Partnership

The patent system has served the Nation well. It has been fulfilling its mission "* * * To promote the progress of science and the useful arts * * *." But the complexities, diversity and pace of today's technological change require greater efforts to insure that the technology disclosed in patents is transferred and diffused. The Federal Government cannot do this alone. Only in active partnership with the private sector, the States and local government can we hope to continue to fulfill fully our constitutional mission.

Primary Journal Project

Presented by: Dr. Lorrin Garson
American Chemical Society
June 15, 1983

For more than 10 years, the American Chemical Society (ACS) has been active in developing systems to produce technical information. The society currently publishes 18 primary journals while a division of ACS, chemical abstracts service, publishes approximately 500,000 abstracts per year. The material from chemical abstracts is available in an online system to the public through several data base vendors.

In 1980, the society began to explore the possibility of making the full text of their primary journals available to the public in on-line form. Although publishers traditionally have viewed printed material as a source of revenue, a variety of publishers are considering electronic dissemination of their products to combat the increasing costs of printing and distribution.

The ACS Primary Journal Project started testing in 1981 with a preliminary file of 1,000 documents. By 1982, Bibliographic Retrieval Services, the data base vendor handling the project, had expanded the file to include the 18 primary journals and 25,000 documents. Approximately 500 people have been allowed to access the file to evaluate its quality. Analysis of usage indicated that while information specialists treated the system only as a bibliographic file, chemists used the system to its full potential. The average number of commands entered per session was 27.7 while the number of system responses was 22. A large number of users searched under the author's employer because that search technique gave an immediate listing of all publications from a specific company. At present, ACS still considers the Primary Journal Project a "pseudoexperiment" and has not yet determined whether to proceed with broader distribution.

Other companies have also entered the full text retrieval market. Services such as LEXIS and NEXIS reveal the growing interest in full text retrieval services by such groups as the publishing industry and the legal profession to save time and costs. In addition, the Harvard Business Review and several encyclopedias are available in full text, on-line form.

In developing its full text retrieval system, the American Chemical Society discovered several difficulties that might arise in future Federal efforts to design similar systems. Education of end users is a critical problem. "The difficulty with it is that the library community * * * feels somewhat threatened by this because they have an uncomfortable feeling that * * * their job disappears on them and they are no longer needed." The technological difficulty of presenting graphics and tabular materials in electronic format is another barrier to offering full text retrieval services.

"* * * (I)t is quite likely that there will be increasing inroads * * * with electronic publishing, whether it be in the receipt of manuscripts in machine-readable form from authors * * * or whether it be in distribution * * *" The increasing number of home computers also will have significant impact on the growth of electronic publishing in the future. Most publishers will be able to adjust to the changes created by the growing reliance on information technology. There is a danger, however, for the small, not-for-profit publishers because their costs will continue to rise, and they will not be able to take advantage of economies of scale.

Electronic Map Storage and Retrieval System: The Use of Videodisks and Microcomputers to Facilitate Distribution of, and Access to, Maps and Related Pictorial Information

Presented by: James H. McCain
Geoview, Alexandria, VA
June 16, 1983

Two relatively new technologies, videodisks and microcomputers, can be used together to provide a unique form of access to maps and other types of pictorial data.

Recently the U.S. Corps of Engineers, in cooperation with the U.S. Geological Survey (USGS), contracted for a prototype disk to demonstrate the feasibility of using these technologies to store and access thousands of frames of photographic information about the Columbia River Basin. Included in the material were USGS maps as well as aerial photographs and still frames extracted from Corps of Engineers' films of the area made over a number of decades.

A master videodisk was prepared using photographic negatives of each of these types of data. An "index" to the disk was then prepared and stored on the microcomputer. Special software allows the computer to interact with the disk to select specific images for display on a color television screen or monitor. Instructions for the user, a menu of available options, and additional textual data are displayed on a second black and white monitor, or in a "window" (split screen) on the sole monitor.

In addition to the Columbia River Basin, disks were demonstrated showing an offshore oil port, parts of the city of Berlin, and an area of desert terrain. In each case the system accessed maps (or engineering drawings) as well as photographs taken at ground level or from the air.

The control of the system is provided entirely by the use of a joystick and a few simple buttons, or alternatively, a "mouse" or touch screen. A user can review a map by "flying" over the surface. He/she can zoom in for a closer look at any given map sector and switch, with the push of a buttom, to actual photographs of the area shown on the map. He/she can "drive" down a street, choosing to turn at any corner, looking right, left or forward. He/she can "fly" in from different directions, at daytime or at night. He/she can "walk" through buildings. This "surrogate travel" is all made possible by the software and the microcomputer interacting with the videodisk.

Large map collections, such as those of the USGS, are presently distributed to depository libraries on paper. Reproduction of color maps is expensive. Shipping requires special handling and containers to protect the documents. Cabinets for storage of maps are costly and require large amounts of space, which is often at a premium in libraries. Paper maps deteriorate rapidly if used frequently, and they are often difficult to retrieve.

This new technology might provide a more efficient and cost-effective means to reproduce, distribute, store, and access this type of material. After initial mastering costs, disks can be pressed relatively inexpensively; they are durable and readily replaced if lost or damaged. Since a single videodisk can store over 50,000 frames of data, disks also provide a means to store large volumes of material in a relatively small area. For example, the entire USGS 7½ minute map series for the United States could be housed on 100 videodisks which would require approximately 12 square feet of storage space.

The microcomputer could be used to link to an online data base or could access through floppy disks information pointing to the specific disk—and specific map—needed to locate a given latitude and longitude, town or city, river, or other geographic landmark. The computer could bring up on the monitor the exact sector of the map on which the desired place was located and could facilitate reviewing the rest of the map using the joystick, "mouse," or touch screen.

The prototype disk had just been prepared at the time of the presentation, and it is undetermined whether the USGS or the Corps of Engineers will pursue additional use of this technology to facilitate their missions. Private sector firms are also exploring the incorporation of USGS maps, a variety of other government and commercial data files, and this technology to create commercial information products.

U.S. Geological Survey Applications of Computer Technology To Map Information Distribution

Presented by: Gary W. North
Assistant Division Chief for Information
and Data Services
National Mapping Division, U.S. Geological Survey
June 16, 1983

One of the first major categories of data that the U.S. Geological Survey (USGS) widely distributed to the public in digital form was the Landsat earth resources satellite data, collected by NASA, and distributed by the U.S. Geological Survey's EROS Data Center in Sioux Falls, SD. Now hundreds of other data bases that exist within the Survey, have been inventoried in a Geological Circular 817, entitled "Scientific and Technical, Spatial, and Bibliographic Data Bases and Systems of the U.S. Geological Survey, 1983 (including Other Federal Agencies)" and the Survey is beginning to distribute much more data in this form. In addition to the statistical data bases described in the circular, a number of information systems have also been developed regarding geological, hydrologic, cartographic, and geographic data. Versions of these data bases are available either on computer compatible tapes, computer output microfilm, or as computerized listings produced in response to selected queries for information from the data bases. The most recent and perhaps, potentially, the largest quantity of data that the USGS will be handling is digital cartographic data. The National Mapping Program has been designated as the lead Federal agency for coordinating and handling digital cartographic and geographic data and information. Most of the map related data that has been used to produce the Nation's 1:250,000, 1:100,000, and 1:24,000-scale maps are in the process of being converted to digital form for handling within computerized data bases.

The distribution of the U.S. Geological Survey's digital cartographic data has presented the Survey with a variety of new problems. Historically, the information produced by the Survey has been released in written or published form. With an ever-increasing amount of data in digital form, distribution operations must have tape copying and editing equipment, and require a whole cadre of people trained to answer inquiries, requests, and to assist users in learning how to deal with this new data form. Because of financial and staffing problems it has been difficult for agencies to release data in this form. As an alternative, some Federal agencies are providing master copies of the data to private companies, for subsequent release to the public, or to universities that specialize in handling the data. One example is the COSMIC operation at the University of Georgia at Athens, GA, where NASA, for example, releases its software programs for analyzing Landsat data.

Another major problem facing Federal producers and distributors of digital data is pricing. The past two administrations have suggested to some agencies that digital data products should be priced at a point where the entire cost of producing this data is returned through public sales. Consequently, data can become extremely expensive. For example, Landsat computer-compatible tapes containing four bands of Landsat multispectral scanner data currently sell for $650 while the return beam vidicon data sells for $1,300.

In addition to pricing, there are a number of other problems relating to the handling and distribution of digital data.

1. Data Availability—In many cases, the data is simply not available. Programs or data bases may have been developed in response to particular data needs or data requirements without any intention of making the data commercially or publicly available.

2. Lack of Documentation—In many cases, there is no documentation of the hardware/software that was used in the programs, which would be vital for someone else to learn how to use the data.

3. System Incompatibility—Data developed on one particular piece of hardware will not run on another set of hardware. Consequently, even though the data may be available, the user may not have the necessary equipment to be able to use the data.

4. Lack of Proper Equipment—Most users lack necessary equipment to handle data in this form. For example, in the cartographic field, very often plotters are necessary to output the graphic products from the digitized map information on the computer tapes.

5. Standards—There are yet no established standards for digital data products. Consequently, data sets are going to vary from agency to agency and even from office to office within agencies.

Following are some of the concerns that various scientists within USGS have regarding digital data.

1. Many scientists feel that raw data in a digital data base are like the material in the first draft of a technical paper or report. In the publishing community, one would not be required to release the first or second drafts but only the final report. Consequently, many people feel that public access to raw data bases should be restricted. To answer the public's need, a specific sales data base might be established. In a sales data base, the data would have been edited and checked, would be in standard formats, and there would be existing documentation for the systems and procedures necessary for the public to use this data.

2. If the public is allowed access to raw data bases, many users will not know the conditions under which the data was gathered. They could very easily draw inaccurate conclusions based on improper use of the data. Also, there are no restrictions or penalties for copying and selling the data by the user.

3. There is also a great concern about who should access digital data bases. For example, within the U.S. Geological Survey, extensive use is now being made of computers as part of mineral assessment programs and statutes require simultaneous release of this information by the Geological Survey. If selected people had direct access to these data, legal problems could arise in terms of challenges from people who did not have access.

4. Perhaps the biggest problems scientists worry about is that, in almost every case of public release of digital data, some sort of user contact is necessary to assist customers in learning how to use the data on their hardware. Many of the scientists feel that it is more important that they conduct their scientific investigations and not have to answer telephone calls from the public.

5. Once people begin to integrate data from several data bases, it is felt that it is going to be extremely difficult to check the accuracy of the data or the conclusions drawn from mixing data from various data banks.

In summary, there is great concern within the Geological Survey over the suggestions that all computerized data should be made freely available through the Government depository program. For example, who is to pay the costs of providing such data, who is to serve as the spokesman for answering questions regarding the data, who is to train people to run the data on various hardware and software systems, and who is to develop national standards for the preparation of and use of such data? It is certain that more and more data will be available in this format, and Survey personnel hope to be part of teams of people that must handle and discuss these programs. Within the various divisions of the Geological Survey, it is felt that the best way to handle the digital data is to create selected sales data bases that are handled by the major informational units within the Geological Survey, and that these units handle requests for distribution of the data. It is also felt that all costs relating to the reproduction, distribution, preparation of user guides, advertising and marketing, etc. be included in the price of these products and that all organizations wishing to acquire copies of this data be required to pay these fees.

Since handling data in computer-compatible form is so different from dealing with publications, it may be more advisable to allow direct depository hookups to the data bases instead of each one trying to establish their own. In this manner the agency still has the responsibility for updating and maintaining the base and public "access" is available when necessary. Some charging method would have to be worked out to support this type of operation, however.

Computer Applications to Technological Information Transfer

Presented by: Louis Tornatzky
Section Head
Productivity Improvement Research
National Science Foundation
July 27, 1983

Much of the current debate on industrial renewal in the United States has centered on the issues of capital investment and regulatory reform. Another area that deserves the attention of policymakers is the process of technological innovation. Technological innovation—traditionally the source of American industrial and economic strength—is highly dependent upon knowledge transfer. "Although capital investment powers the loom from which innovation is spun, knowledge is the thread that binds the process together * * *. However, the dissemination and utilization of knowledge [that is crucial to the innovation process] is quite imperfect in this country."

Successful information transfer is contingent upon the nature of the transfer medium. There are currently three general modes of knowledge dissemination: interpersonal communication; hard copy printed material; and electronically mediated knowledge. Each of these transfer modalities has advantages and disadvantages regarding knowledge transfer, which in turn has implications for the process of technological innovation. Although face-to-face communication is an effective way to promote knowledge transfer between scientists and engineers, the main disadvantage is the undue demand on resources and time. Research on information transfer via printed material indicates that it is an inherently less powerful medium than interpersonal communication. In addition, printed media frequently are not timely and often create storage and retrieval difficulties. On the other hand, electronically mediated knowledge transfer offers viable solutions to the problems presented by the first two methods.

Given the advantages of electronically mediated knowledge transfer, "* * * increasing access to Government information in electronic format is a highly desirable public goal * * *. For a relatively modest public investment, the increment in improving the innovation process could be considerable." However, several factors should be considered before implementing such a system. Policymakers should remember that the information system potentially could serve many different types of users with varying resources. Since small research and development firms and individual inventors are critical to the technological innovation process, managers should carefully review their needs. Also, any expanded depository library system should be systematically marketed to potential users. In addition, policymakers should include librarians in the planning stage and should determine whether individual depository libraries have the resources to establish new systems. Finally, providing access to Government information in electronic format should be "* * * approached as an empirical exercise rather than via armchair opinion."

The Mechanics of Technological Information Transfer

Presented by: Thomas J. Allen
Organizational Studies
Sloan School of Management
Massachusetts Institute of Technology
July 27, 1983

Science and technology—and their respective information flows—are "* * * very different entities." Scientists communicate with each other, read each other's papers, and publish scientific papers. Both the input and output of science are in the form of information. Technology also consumes and transforms information; the output, however, is in the form of products or processes and cannot serve directly as inputs to the next stage of research and development as in the information-processing system of science. This structure of information flow for technology has led to different patterns of technical information transfer among engineers.

To better understand the process of technical information transfer and to provide direction to those who design information systems, the Sloan School of Management studied the information habits and needs of over 200 engineers. Findings indicate that only 18 percent of ideas had origins in printed materials. Instead, most engineers acquired knowledge by interpersonal communication with their colleagues. Further, the better ideas came from individuals within the organization. "There are very real barriers to the transfer of technology at the organization boundary."

The research also focused on communications networks (or contacts between engineers) and their impact on technical information transfer in research and development (R&D) laboratories. After observing individuals over a period of time, a consistent pattern was revealed. A few individuals not only read the literature, but also cultivated contacts outside the organization. These engineers served as intermediaries or "information gatekeepers" by keeping up-to-date on current literature as well as bringing technical information into the lab from other organizations.

The existence of gatekeepers among engineers engaged in R&D projects has important implications for designers of information systems. By targeting technical data to those intermediaries directly involved in transferring information via interpersonal communication, a broader audience can be reached. These findings may be useful in any future efforts to institute a system in which depository libraries can access Federal automated data bases.

Depository Library Programs Service

Presented By: Joseph C. McClane
Depository Library Inspector
U.S. Government Printing Office
and
Sarah Thomas Kadec
U.S. Environmental Protection Agency
July 29, 1983

Mission

44 U.S.C. 19 provides for free public access to Government publications in Federal depository libraries. Also by authority of chapter 19, the Library Programs Service conducts those programs necessary for the effective administration of the Depository Library Programs. The Cataloging and Indexing Program ensures adequate bibliographic control over Government publications. The Depository Library Administration Program covers a range of functions intended to acquire, process, and distribute Government publications, as well as to monitor the performance of depository libraries in carrying out their responsibilities under the Depository Library Program.

Description

At present, there are 130 people employed at the Library Programs Service. The total fiscal year 1983 salaries and expenses appropriated was $27.3 million and included $21.4 million for the Depository Library Program. $3.3 million for the Cataloging and Indexing Program, $2.3 million for the By-Law Distribution Program, and $0.3 million for a contingency reserve. This service is divided into two divisions: the Library Division and the Distribution Division.

The Library Division is responsible for the administration of the Depository Library Program and the cataloging and classification of all Federal Government publications with certain specified exceptions. The Library Division employs 15 catalogers and 10 classifiers in its Classification and Indexing Program. Of the approximately 90,000 titles that were classified in fiscal year 1983, 30,000 titles were given original cataloging. GPO's contractors processed nearly a third of this amount. In addition, all U.S. Government documents are indexed and listed in the Monthly Catalog of U.S. Government Publications, which is a comprehensive listing of these documents.

The Depository Administration Branch (DAB) of the Library Division maintains extensive records that deal with the Depository Library Program, including: depository selection profiles, distribution schedules, and survey results.

DAB surveys selective depository libraries semiannually to determine which publications these libraries wish to receive. Survey results are used by DAB to determine the total number of publications needed for distribution.

The acquisition unit monitors the flow of new titles. The unit consists of five acquisitions technicians who serve as liaisons between DAB and GPO's Planning Service, the regional printing procurement offices, and the Federal agencies. These technicians help to ensure that LPS receives correct quantities of Federal documents to distribute to depository libraries.

When Government publications are initially received by the DAB staff, a determination is made as to whether or not to convert the paper copies received into microfiche. Actual conversion to microfiche is done off-site by GPO's contractors.

The Library Division also operates a Depository Library Inspection Program. Four inspectors regularly examine depositories for compliance with title 44, United States Code. During fiscal year 1983, 231 libraries were inspected.

The Distribution Division is responsible for receiving depository materials and for distributing these materials to the 1,384 depository libraries. During fiscal year 1983, the Distribution Division sent out 32 million pieces (9 million in paper, 23 million in micrographic format). This number amounts to over 62,000 titles, which included approximately 21,000 congressional bills and resolutions. Fiscal year 1984 will see a significant increase in the amount of materials distributed, including an additional 5,500 Defense Mapping Agency (DMA) and USGS maps and 27,000 DOE/TIC reports.

Depository Libraries

There are over 1,384 depository libraries located throughout the United States and its territories. Representatives are allowed to appoint 2 libraries from their congressional district. Senators are allowed to appoint two libraries from their State. These libraries are responsible for meeting the Government information needs of the American people. Court, State, Federal, and land grant college libraries are also eligible for depository status.

Since there are relatively few libraries large enough to absorb all of these materials and retain them in perpetuity, each State is allowed at least one regional depository library. These regional libraries agreed to receive all Government publications and retain them forever. All remaining depositories in the State are then free to select only those materials which they feel would be potentially useful; and they need only retain the documents for 5 years if permitted to do so by their regional. If a selective depository receives a request for a document that is not in its collection, it may obtain the document or a photocopy from the regional library. There are 51 regional libraries and 1,333 "selective libraries" in the system.

Depositories are located in a number of different kinds of libraries. Over half (57 percent) are located in academic libraries. Almost 20 percent are located in public libraries. The remaining depositories are located in other types of libraries (law, court, Federal, historical, medical, etc.).

National Technical Information Service: Technology for U.S. Productivity and Innovation

Presented by: Kenyon C. Rosenberg, Associate Director
National Technical Information Service
July 29, 1983

As a cornerstone of the technological publishing structure in the United States, the National Technical Information Service (NTIS) is a key participant in the development of advanced information products and services for the achievement of U.S. productivity and innovational goals in the 1980's.

NTIS, an agency of the U.S. Department of Commerce, is the central source for the public sale of U.S. Government-sponsored research, development, and engineering reports, as well as foreign technical reports and other analyses prepared by national and local government agencies, their contractors or grantees. It is the central source for federally-generated, machine-processable data files and software, and manages the Federal Software Exchange Center. Consequently, NTIS is one of the world's leading processors of specialty information.

The NTIS information collection exceeds a million and a half titles, more than 300,000 of which contain foreign technology or foreign marketing information. All are permanently available for sale, either directly from the 80,000 titles in shelf stock or from the microfiche master copies of documents less in demand. Seventy thousand new reports of completed research are added to the NTIS data base annually. In the same period NTIS supplies its customers with more than 6 million documents and microforms, shipping about 23,500 information products daily.

Full summaries of current United States and foreign research reports and other specialized information on hundreds of subjects are published biweekly in Government Reports Announcements and Index (GRA&I). Each biweekly issue contains abstracts of more than 2,600 new titles, and every issue includes five separate indexes by subject, corporate author, personal author, contract number, and accession/report number.

NTIS also produces weekly Abstract Newsletters, which provide timely research summaries within 3 weeks of their receipt by NTIS from the originating agencies. These are available in 26 subject categories and ensure maximum coverage of broad areas of Government research in brief and convenient form at minimal cost.

Anyone seeking the latest technical reports or wanting to compile unique subject groups of abstracts may search the NTIS Bibliographic Data Base (which now numbers one million citations, and contains records for items received by NTIS since 1964) online using the services of vendors or organizations that maintain the data base for public use through contractual relationships. The whole data base in machine-readable form may be leased directly from NTIS. The more timely documents in the collection are continually grouped by NTIS into paperbound Published Searches, covering some 3,500 topical subject areas.

Customers with well-defined continuing interests may subscribe to a standing order microfiche service, Selected Research in Microfiche (SRIM), which enables them to automatically receive the full tests of only those documents relating to their individual requirements.

SRIM makes available reports in technological, sociological, scientific, engineering, or business related subjects in 38 major categories and 355 subcategories. If a cutomer has a particular need, NTIS analysts are available to help select the research reports which are specifically needed. With SRIM service, reports are received automatically every other week at about the same time the reports are first announced.

A new organization has been established within NTIS to alert U.S. industry to selected Federal technology having immediate practical value. It is the Center for the Utilization of Federal Technology (CUFT), and it was established in response to the recently enacted Stevenson-Wydler Technology Innovation Act. CUFT is working with Federal agencies and their laboratories to select and highlight new technologies with potential commercial or industrial applications.

Starting with the thousands of U.S. companies that are customers of NTIS, the Center is drawing upon NTIS' resources to specially alert industry to this selected technology. It is expanding the announcement of Government inventions available for licensing, increasing the technology fact sheets in its Tech Note service, and it is preparing new special current awareness catalogs, directories, and services.

NTIS is the central source for information on all new U.S. Government-owned patents and patent-pending applications. These inventions primarily come out of Government laboratories but also include contractor inventions to which the Government has title.

Information is available on nearly 1,500 new Government inventions annually. (More than 25,000 U.S. Government inventions are now in the NTIS data base.) Cooperating agencies submit their new inventions to NTIS when patent applications are filed with the U.S. Patent and Trademark Office and again when the patents are issued. These inventions are summarized in the NTIS-illustrated Abstract Newsletter, Government Inventions for Licensing.

NTIS produces Tech Notes which are one- or two-page monthly summaries, often illustrated, of new processes and products considered to have commercial potential, having been developed by Federal agencies and their contractors.

Tech Notes are sold by subscription in one or more of the following subject categories, each containing from 5 to 30 notes. Computers; Electrotechnology; Energy; Engineering; Life Science; Physical Sciences; Machinery and Tools; Materials; Manufacturing; and Testing and Instrumentation.

Among the Government agencies preparing Tech Notes are the Department of Energy, the National Aeronautics and Space Administration, the Department of the Army, the U.S. Bureau of Mines, and the Environmental Protection Agency.

NTIS subject category contains a Foreign Technology Alert Section, which reports on innovative technologies developed under foreign sponsorship, and an annual index.

NTIS sells its technical information products and services under the provisions of title 15 of the United States Code (1151-7). The law established a clearinghouse for scientific, technical, and engineering information and directed NTIS to be self-supporting.

NTIS, therefore, is a unique Government agency sustained only by its customers. All the costs of NTIS salaries, marketing, and postage, and all other usual costs, are paid from sales income; not from tax-supported congressional appropriations, except certain developmental programs which could become self-supporting in the future.

The State Data Center Program

Presented by: Michael G. Garland
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Bureau of the Census
Department of Commerce
September 21, 1983

The State Data Center Program was initiated by the Census Bureau in 1978 to improve access to the many statistical products available from the Bureau. Five objectives have been established for this Federal-State cooperative program:

- Provide an institutional structure at the State level to disseminate census statistical products.
- Provide an increased flow of information about the Bureau's statistical products to data users.
- Provide more comprehensive data access assistance to users.
- Moderate the cost of acquiring census data.
- Direct user feedback on data problems and needs to the Bureau.

Through the program, the Bureau furnishes statistical products, training in data access and use, technical assistance, and consultation to States which, in turn, disseminate the products and provide assistance in their use.

Program Structure

The organization of each State Data Center (SDC) varies from State to State, but usually involves a major State executive or planning agency, a major State university(ies), and the State library. The organizations determine the exact structure of the individual State programs and serve as the SDC's principal service, delivery, and coordinating units.

In addition to this umbrella structure, participating States are required to establish a network of affiliate data centers. Through the cooperative efforts of the affiliates—organizations such as regional and local planning agencies, public and university libraries—the SDC's can multiply their efforts to help the public's access and use of Bureau data.

State Program Activities

State data centers provide a variety of statistical products and technical services to data users. Each SDC provides the staff and budget support to carry out the following activities:

- Maintain library facilities with emphasis on reference materials and Bureau reports and maps.
- Handle inquiries regarding the economic or demographic statistics of the Bureau.
- Provide user training such as workshops on accessing and using Bureau data.
- Provide data processing services such as acquiring; testing; and maintaining Bureau data tapes, geographic reference files, and software; and providing data users with tape copies, printouts, and demographic and geographic profiles.
- Consult on data use.
- Provide analytical support such as technical assistance in completing Federal grant applications, or the use of software for statistical analysis, modeling, and graphics.
- Carry out promotional activities involving the distribution of newsletters and brochures and participation in meetings and workshops.

Affiliate Program Activities

Affiliate data centers are established within regional councils of governments, local government agencies, libraries, colleges, or similar organizations to provide localized services in making data resources and assistance available to specific communities, counties, or multicounty areas. Affiliates maintain a collection of major Bureau reports for the State and their local service area. They provide assistance in locating and using the data or make referrals to other organizations in the network. Affiliates also cosponsor seminars and training sessions and may offer expanded data services such as computer processing or data analysis.

Census Bureau Support

The Bureau through its Data User Services Division and the 12 Bureau regional offices provides the support for the SDC Program. The Bureau supplies a full range of data products including publications, computer tapes and software, and microfiche to each State at no cost. Onsite training relating to data access and use, tape processing, and other technical aspects of the Bureau's statistical programs is also provided in addition to technical consultation and assistance. The Bureau does not provide any financial support to the States.

SDC Program Participation

Today, 49 States, Puerto Rico, the Virgin Islands, and the District of Columbia are participating in the SDC Program. Included are 95 State agencies, 300 libraries (either State, university, or public), 150 university research groups, 600 regional/local planning agencies, and 50 community-based organizations. The Bureau, is very pleased with the significant opportunities that this national network has created for the public to know about and obtain census data.

Full-Text Search and Retrieval Technology: GESCAN2

Presented by: H. Gerald McQuire
President, ISA Inc.
September 21, 1983

Hardware-based full text search and retrieval technology is a cost-effective alternative to software-based inverted reference file search and retrieval systems. With retrieval systems that use software-based technology, such as Lockheed's DIALOG and System Development Corp.'s ORBIT, users only retrieve citations to textual material and later spend valuable time obtaining the documents. With hardware-based systems such as GESCAN2, users can efficiently search and retrieve the full-text of the desired material. Estimates of the relative cost performance advantage of hardware-based over software-based search and retrieval systems range from 100–1000 to 1.

The GESCAN2 system searches uninverted textual data bases at speeds in excess of 20 million words per minute, regardless of the logical complexity and size of the query. The speed—more than 100 times faster than typical software-based systems—is achieved by means of multiple query processors operating simultaneously at the same high rate. One available configuration with an array of 128 query processors, called Text Array Processor, can perform parallel word matches at an effective peak rate of over 60 billion words per minute.

A comparison of hardware-based text searching systems with software-based systems shows why the technology of a GESCAN2-type system yields relative cost-performance advantages. With hardware search systems, the full text is searched and online updates are possible. In software search systems, keywords and addresses are searched (40 to 60 percent of the text is excluded) and batch updates are normally required. In addition, this latter technology requires substantial front-end costs associated with human abstracting and indexing. Other advantages of hardware search systems include: parallel query processing; simultaneous query processing and data transfer; immediately available text output; and no keyword indexes.

Hardware-based full text searching systems are a "* * * very promising field, and * * * librarians can lead the way in the use of this technology in showing us how it can really be used to find information." This technology could have a major impact on the future design of information retrieval systems and could provide both new capabilities and new economies in information search. "This technology and its potential * * * suggest * * * that it may be feasible or desirable to provide full text * * *" in future Federal electronic data bases as well as reference information.

Electronic Document Storage and Retrieval Program Status Report

Presented by: George R. Thoma
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National Library of Medicine
Bethesda, MD
September 22, 1983

Background

The Lister Hill National Center for Biomedical Communications, the R&D arm of the National Library of Medicine has a program under way to design, develop, and evaluate a laboratory facility that serves as an engineering prototype that will electronically store, retrieve, and display documents acquired by the Library. The long-term goal of this Electronic Document Storage and Retrieval (EDSR) program is to help introduce advanced technology to aid the Library in fulfilling its mission as a national archive for biomedical literature. The experimental system is being developed by integrating various subsystems such as a Document Capture Subsystem, high density storage media, Document Display Subsystem, and a System controller. The resulting engineering prototype will enable both technical and operational evaluation to be done.

The Document Capture Subsystem electronically scans paper documents containing textual and graphic material, and digitizes the analog electrical signals generated by the scanning process. This subsystem consists of both a high resolution scanner that will capture loose leaf documents, as well as a bookscanner for bound volumes. While at present only two-tone images are being captured, the capability of accommodating gray levels in the future is being built in.

The Document Display Subsystem reproduces retrieved documents at high resolution in both softcopy (electronic display) and hardcopy (paper) forms. Each form has specific advantages. An attractive feature of hardcopy is that it may be retained as a permanent record. On the other hand, an advantage of softcopy is that the electronic screen may be reused for the rapid display of a large number of images, facilitating, for example, browsing by users as well as monitoring for quality control during scanning and storage.

Current Status: Phase 1 Completed

Phase 1 of the program is complete. The laboratory facility serves as an integrated prototype EDSR system capable of scanning documents, storing and displaying them. At present, the scanner output is being stored on high density magnetic discs, allowing about a thousand pages of storage, sufficient for preliminary experimentation and demonstration. These magnetic discs will eventually serve as buffer storage to an experimental archival system to be implemented with optical disk technology. Much higher storage densities will be possible with the incorporation of optical disks into the system at a later stage, as well as the development and implementation of compression techniques that will reduce redundancy in the scanner output.

Planning is under way for the research and evaluation phase. In addition to the evaluation activities described below, research activities in image compression, image enhancement and text recognition are being conducted using the phase 1 prototype system as a test bed.

Future Directions

The next activities fall into two phases much of which will run concurrently. In phase 2, the prototype system will enhanced by the design, development, and implementation of archival capacity. This is to be accomplished by optical disk technology. Also, the hardcopy output is to be upgraded to allow plain paper output at a higher speed. The present device has the disadvantage of expensive chemically treated paper and its slow speed is a deterrent to effective usage of the EDSR workstation.

In phase 3, a comprehensive Evaluation Program is to be developed and implemented using the prototype system as a laboratory test bed to conduct research into document image processing techniques for electronic document capture, storage, retrieval, and display in line with technical and operational objectives consistent with the NLM mission for archival storage. Also the utility of an EDSR system for NLM operations (in such areas as reference, indexing, etc.) is to be evaluated.

The evaluation effort will take the following approach: a set of experiments will be designed, each with hypotheses, evaluation criteria, methodology, procedures, test data, and data collection and reduction techniques. These experiments will utilize the elements of the prototype system in appropriate configurations. The reduced data will address the hypotheses, possibly refine the evaluation criteria, and define modifications/extensions to the system as well as form the basis for developing operational procedures.

As an example, image quality evaluation might be approached in the following way. The image quality delivered will be related to the factors present in document capture (e.g., illumination intensity, speed of capture, illumination spectral characteristics, document characteristics in terms of character size, ink type and surface reflectivity) and in document display (e.g., contrast, flicker, screen brightness) to allow an understanding of the effects of these multiple variables. Measurements of these parameters under controlled conditions will provide the data base needed for the construction of an analytical model allowing for optimization and possible system modification.

Among the objectives of the Evaluation are the following:

- To evaluate the capabilities and features of the EDSR prototype system in terms of image quality delivered; overall system reliability and reliability of individual subsystems; document image throughput; speed and reliability of document access and retrieval; and system maintainability. Meeting this objective includes defining necessary modifications/extensions.
- To evaluate, in collaboration with the Division of Library Operations, the operability of this system which depends on: the ease with which a human operator can use the system to capture or retrieve documents; impact of mechanical factors such as noise, glare, heat and transport/holder design on the operator; user acceptance of a display workstation with its mechanical layout and configuration; the effects of image flicker, resolution limitations, legibility, geometrical distortion and response time. Modifications/improvements to the system as well as operational procedures will be defined.
- To evaluate the requirement for, and implementation of, quality control techniques. Hardware/firmware will be defined to incorporate quality control capability.
- To evaluate/confirm the design objectives and engineering specifications for each subsystem and the overall system. Meeting this evaluation objective will allow redefining design objectives and specifications in line with the concurrent evaluation of capabilities/features and system operability.

Display Technology Status

Presented By: Robert A. Myers
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Yorktown Heights, NY
October 26, 1983

In order to understand the role of different display technologies, we first should review the different kinds of information display: text, graphics, and image. After drawing a distinction between the resolution of a transducer, and the addressability of the transducer, we then briefly may discuss color displays, multidimensional displays, and the various ways in which a user interacts with a display device. A brief review of the factors that contribute to the speed of a display may be followed by a listing of the important parameters which one uses to characterize different display technologies and terminals.

For many years, the cathode ray tube (CRT) has been by far the dominant display device. The properties and limitations of the most common CRT, used for entertainment, will serve as a beginning for comparison with more complicated display technologies. Additional display nomenclature relating the many different display technology options to their potential uses may be listed, including conventional, shadow mask, penetration, storage, and flat CRT's; liquid crystal displays (LCD's); electroluminescent displays; laser-liquid crystal projection display; AC and DC plasma panel displays; light-emitting diodes; electrochomic; and electrophoretic displays.

Quantitative comparisons of some of the important parameters for the different technologies may be made, emphasizing the number of displayable points and the resulting capability of the different devices when used as character displays. Finally, we should take a look at flat panel display technologies, which are frequently reported as being on the verge of surpassing CRT's.

For the display of text in the next few years, CRT technology will continue in its role as the most cost-effective technology for almost any desired functional capability. For those applications where a minimal "footprint" is required, or where extremely low power consumption and/or weight are needed (as in applications demanding portability), LCD's appear to be the technology of choice. Due to its present limitations relating to number of displayable points, contrast, and viewing angle, as well as what may be short-term cost penalties, it appears as though it may be some time before this technology expands from its important niche and becomes a pervasive alternative to the CRT.

The Future of Electronic Printing

Presented By: Paul A. Strassmann
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Stamford, CT
October 26, 1983

The Economics of Paper

There is a relationship between the method of office communications and the use of paper. The economics of paper consumption changes with electronic printing.

Office paper usage, per information worker, has been growing steadily since 1946 at a rate about double the growth in the GNP. My projected paper consumption estimate, per information worker, in 1992 is 24,600 pages per year. It is a conservative estimate because occupational shifts continue to favor those personnel who use a lot of office paper. For instance, operations labor—which uses only small amounts of office paper—continues to decline, whereas professional and technical manpower—notorious gluttons for paper (at rates of more than 300 percent of the average)—continue to increase.

We can feel safe about our forecasts of increased paper consumption in the office because of the proliferation of the means to make copies. The number of data-processing high-volume printers will most likely increase from the current 250,000 to more than 420,000 by the end of the 1980's. A substantial growth in office printers is also anticipated: from 2.1 million in 1982 to at least 11 million in 1988. I view electronic printers as highly efficient engines for low-cost printing on paper. More printers certainly generate more paper copies. Moreover, the rapid introduction of video display units (VDU's) actually promotes the making of copies because VDU's are a very effective means of generating originals. Inexpensive originals breed conveniently produced and inexpensive copies. Copies require paper.

Another way to check on our projected growth rates is to look at the fastest growing part of the office business: computer paper shipments per billion dollars of GNP. Such shipments grow at an 8-percent compound growth rate. Electronic printing has generated an enormous capacity for printing information at a materially reduced unit cost.

It is not paper that is expensive. It is the labor cost that surrounds its use that costs the big money.

To understand what the trends in paper consumption mean, we need to go back to economic fundamentals. Starting with the economics of an office copier is as good a way of understanding the issues as any. In today's office, a very efficient copying and duplication technology is surrounded by very inefficient and expensive office labor. When we come to text creation, we observe that it takes anywhere from $10 to $100 to create an original page. Then we put this original through a copier at $.025 to $.06 per page. Then we will use up another $1 to $5 per page to deliver the text to the ultimate users and store it there. There are practical limits to how much one can improve upon the copying or printed originals. There are, however, virtually no limits to the cost-reduction opportunities in the labor that precedes and follows copying.

Incidentally, the economic successes of xerography was one of the major marketing surprises of the 1960's. Using purely engineering- and cost-displacement analysis, it was not possible to predict the extraordinary rate of acceptance and use of this device. As a matter of fact, the rejection of Chester Carlson's invention by all leading U.S. corporations and the initial low market forecasts by the Haloid Co. remain classical examples of a technologically biased myopia. However, if we examine what has happened on a global scale with the growth of complex bureaucracies starting in the late 1950's, we will discover that the office copier is the ideal machine for maintaining low-cost lateral communications in increasingly layered and structured organizations. The office copier fulfilled a need that could have been anticipated only through socioeconomic analysis. The ubiquitous office copier had an immense potential demand awaiting its invention because it was needed to facilitate the operation of large organizations. Whether multinational corporations form the building blocks of a future global commercial society, or whether the decentralized, entrepreneurial organization becomes the preferred way to structure business is likely to have a much greater influence on the future use of paper than any merely technological development I can think of. The large, vertically integrated organizations have a greater propensity to rely on written information in order to keep their various functions integrated. They will produce office text in large quantities because it is not the cost of paper but the cost of coordinating communications that can be reduced when text is circulated.

What electronics and computers can do for the customer is to reduce costs in offices where large amounts of labor are consumed in handling text. With today's technologies, the potential reductions are very large. By replacing a metal filing cabinet with an electronic one, the labor cost of handling information drops by 60 percent. By replacing a mail basket with electronic mail, the labor cost of handling information drops by a further 40 percent. These cost reductions reflect the ability of text to travel under computer control. Even so, this technology still costs too much. At present it takes $.90 to send a page of text electronically. The total estimated annual volume of electronic text transmission remains a relatively insignificant 2 billion pages. The projected 1995 costs for transmitting a page of text within the United States is about $.08. At this price, it is estimated that the equivalent of 250 billion pages of text may be entrusted to the electronic transmission medium. Even this would amount to only about 15 percent of the total volume of office paper finally generated by office printers and copiers. It is the fascination with purely technological solutions that results in the premature conclusion that the office of the future must be fully electronic and without paper.

What is not generally understood is that the major portions of projected savings do not come from just installing electronics, but from the means which people acquire to handle their business differently. The flow of information can be made much simpler when handled electronically. In an electronic environment, the jobs people do must be changed in order to achieve the full savings potential.

Human factors

Once an economically feasible and technologically efficient electronic system is installed in the workplace, here still remains the question: Will people use it? Whether the office of the future is to be paperless will not be revealed by searching the technical literature for clues about what is likely to happen. The right questions must deal with probable changes in the behavior of individuals, such as: Will people still read in the future or will they just talk and look at pictures? If people continue to read, will they do it from some sort of a direct electronic display or will they continue to prefer the printed page?

I believe that a more complex, high-technology society will demand increased, not decreased, reading. Reading is still the most efficient method for communicating words. Consider the following estimate of various speeds in receiving information:

	Words per minute		Words per minute
Typing......	50-90	Hearing....	100-300
Speaking..	100-175	Reading....	250-2000

The raw speed of receiving input is not the only factor to be considered. The eye can backspace its scan of a sentence in order to improve its comprehension of the message. The ear cannot backspace. At least a minimal dialog is necessary if the spoken word is to be clarified.

Speaking and hearing are necessarily synchronous—even in video teleconferencing—that is, everyone concerned must be present for communication to take place. Reading is asynchronous, that is, the author and the recipient can be separated by time and space without essentially disrupting communications. As a broad generalization we can say that all sychronous communications are rapidly growing in cost because they require idle labor to queue up until useful communication can take place, whereas asynchronous communications are rapidly declining in cost because messages can be received on demand. Synchronous communications continue to be favored for unstructured conversations because they are highly adaptive to complex interaction among individuals, whereas asynchronous messages are preferred where the structure and the form of the communication can be defined.

Our society is very complex now, and will require even more intricate coordination in the future. People, therefore, will have to read more until some radical new technologies of communication become practical. In a multicultural, global business environment, the asynchronous aspects of reading translated text are particularly attractive. Reading will continue to have a 10:1 to 30:1 advantage over hearing in business communications, especially for understanding of new ideas and for learning about new experiences. In global business and scientific communications, text will clearly dominate over the verbal medium as the means of minimizing language barriers.

The future of reading is well assured in the conduct of business. With innovations in the techniques for creating, distributing, and printing text, the importance of the written medium relative to the spoken medium is likely to increase.

If we can accept the idea that reading will not disappear in favor of more staff meetings or television broadcasts from the head office, the remaining question should deal with the medium through which reading will be done. Will it be paper or the VDU?

I have tried to identify the critical factors that may have a bearing on either choice. For each of these factors, it is possible to prepare a checklist that will contrast the characteristics of reading from paper as compared with reading from a VDU.

- The human nervous system has a special control mechanism for coordination of the hand with the focusing muscles of the eye. Among the things a baby learns is to focus on objects in its hands. The nerves and muscles that control the focusing connect the hand and the eye directly. Therefore, it will always be much easier to read something held in the hand than something that just sits on a table.
- The coordination of hand and eye also allows very rapid scanning of paper text and paper files. Even if the computing power to process ten millions of instructions per second were inexpensively available in a VDU, it still would not be able to keep up with the intuitive way in which people leaf through a book or browse through a folder.
- There are some major problems involving the contrast between a terminal that generates internal light and a piece of paper that reflects light from the environment. Our minds and eyes are much better equipped to deal with reflected light.
- For the eyes to relax, they must be allowed a focus to infinity at frequent intervals. The fixed positioning of the VDU in the office environment, usually against a wall or an item of furniture, may create problems for relaxation. A person must use body movements to permit the eye to sight a more distant object.
- The adaptability of the eye to a great range of illumination makes it much more compatible to the changes which take place in the environment when information is reflected from paper than when displayed on a VDU. When illumination levels in the office are set at high levels, as is customary for correspondence and drawings, this will clash with the optimal environment for VDU's, whose light is not reflected but comes from within. For best viewing of VDU's, a fairly dim environment is preferable. If an engineer uses a dark green-on-black VDU in a brightly lit drafting room while making frequent references to handwritten computations, it will be visually

uncomfortable. Not only will the VDU screen mirror reflected lights from the overhead fixtures, but the eye will have difficulties in adjusting between the bright light that is optimum for paper and the lower levels of light that favor the VDU.

- Paper is much more adaptable than electronic information equipment. Until VDU technology makes great improvements—developing totally portable and book-like VDU's—they will have many disadvantages with regard to location and position where and how they can be used. The need for a power supply, the need to hold the body in a rigid position for focusing, and potential for all sorts of mechanical and electrical inconveniences are just a few of the inherent disadvantages in the uses of VDU's.

There are, however, important advantages which favor VDU's over paper. These advantages will ultimately increase the number of equivalent pages read electronically over pages read on paper. VDU's win over paper in the following areas:

1. It is easier to use VDU's for rapid receipt of brief messages.
2. They are superior when immediate action must be taken.
3. They can be used in interactive situations.
4. VDU's can perform complex data and text-retrieval tasks.

VDU growth will come almost entirely from new applications, rather than through elimination or substitution for old uses.

Messages received over VDU's will be different kind of reading material from what is read today on paper. VDU text will be used in addition to, not as a substitution for, existing habits and practices. VDU's have attributes which are largely absent from paper. Psychologically, they have a much more immediate relationship to a human than paper, since the screen can be made to respond, whereas the paper cannot. After all, maybe the right way to examine the human factors question is not in terms of paper versus VDU's. I think that the only valid debates are those aimed at finding out the best combination of both media to improve the quality of human understanding.

Reading or Comprehending Information?

It must be clear by now that the electronic era can drown us with the amount of information that it can generate. How can all of this information be absorbed by the human mind? How can we distinguish between the efficiency afforded by being able to read all of the text that is generated and the effectiveness involved in comprehending it as useful information? We cannot trust projections based only on current technology to anticipate the evolution of electronic printing. Probing into the origins of printing may give us some better clues, because this may reveal to us some of the underlying forces that have shaped its evolution so far. The whole idea of Gutenberg's invention was based on standardized text, mass produced for mass distribution. In fact, book printing—using uniform, precast metal letters produced by means of a standardized manufacturing process—can be seen as the earliest example of industrialized mass production.

The VDU should not be viewed as a total opposite of paper, a medium that will eventually replace it, but as a complement that will help us to obtain the benefits of both media. We should use the flexibility of the VDU and the visual qualities of printing in combination as a new communications medium. Interactive text is based on the principle of generating printed information only in response to human wishes, as conveyed by electronic means.

Text can be custom-assembled, by electronic means, from a collection of various sources. In this respect it approximates the exploratory structure by means of which an individual mind searches for knowledge, except in this case the process is aided by means of computer-aided displays. Recorded knowledge is then retrieved by means of computer-aided choices as a unique collection of the text pages. The retrieval is accomplished as a one-of-a-kind operation in meeting specific user needs.

The basic concept behind interactively composed text is precisely opposite to that of the Gutenberg text. Each selection of a block of information is a unique combination of ideas, produced in a customized form for individual needs. It does not cater to the needs of standardized mass markets. It is the ultimate in adaptation. The concept of a personalized document is well suited to the need of individuals to explore, to learn, and to provide customized services themselves. It is the textual form for the narrowcasting of reading and learning material in the same way as the printed book represented the first industrial-age example of broadcasting. Its business uses will be determined by changes in the patterns in which the future enterprises may choose to function. For instance, the information worker of the future—who needs to complete a complex task for a specific customer—would be a consumer for interactively composed text, since the needs would remain unique in each instance.

An interactively composed textbook would be assembled by an individual searching through various data bases and files for information and combining only those specific paragraphs or sections of interest. He would use a VDU that does not just imitate a page of text, but creates a display that opens several simultaneous views into logically related topics. Such a multiple perspective is possible only be electronic means because it creates a multidimensional view of information, combining the flexibility of text and graphics with the analytic properties of the computer. What you see on such a screen are "windows" which show the relationships among the various pieces of information stored electronically, either within the workstation or elsewhere within the network. "Intelligent" software makes it possible to combine information in one of the windows with that in another. If changes are made in one source of information, the internal logic of the computer will make corresponding adjustments in related information.

Interactively composed text is the next great breakthrough for communications because it will change the dimensions of human capabilities—perhaps even more than printing changed the dissemination of knowledge when it introduced the mass distribution of text.

The new approaches to creating, composing, retrieving, and distributing text will make it possible to break the tradition of specialization that has characterized our industrial culture; they will permit individuals to become multipurpose generalists. The many windows into information may make it possible for individuals to deal with a much more complex world.

The future text is an assembly of the printed material edited by the reader, rather than by the author.

The real innovations in the future use of electronic printing will not be so much in hardware as in software. The electronic printers of the future will possess enormous logical powers to keep up with the explorations of the mind through complex networks, producing interactive documents as a byproduct. The key to the future of electronic printing is demand publishing of information collected from data bases all over the world.

VDU's will not dominate reading. They will deal with the logic of information search, with composition of text, and with terse, highly structured messages. Electronic printing will be the technique for generating an increasing variety of books, magazines, and documents. Electronic printing will be especially important for generating large graphic pages, usually in color. Electronic displays will be closely connected with the process of making individual choices for printing. The future of electronic printing will be assured by the accessibility of electronic text through worldwide communications networks.

Additional readings on this subject:

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Libraries and Electronic Services

Presented By: Nancy Cline
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University Libraries
The Pennsylvania State University
October 27, 1983

"* * * (L)ibraries are no longer to be thought of as a paper only environment." Today, with the increasing availability of information technologies, libraries are moving away from the role of providing a collection of books and journals toward providing information in electronic format. This trend toward electronic dissemination of information raises questions that librarians need to examine: What will be the users' direct pipeline to information; what will be the libraries' role; and what will be the effect of computerized systems on information transfer?

Any future efforts to establish information networks for electronic transfer of Government documents should build on the experience of existing library computer networks. One such network in the academic community is "The Library Information Access System" at Pennsylvania State University. The system includes a network of 20 libraries with one main central campus facility that performs centralized acquisition and processing for 19 other campuses in the State. The central facility not only acquires traditional materials such as books, journals, and microfilm, but is currently being urged to acquire computerized data bases. In addition, the Pennsylvania State University library has recently made available to the public an online catalog. The experience with automation and networking has enabled library management to identify user needs and expectations of computer/telecommunications technologies as well as to plan for the future impact of information technology on collection management and control of bibliographic resources. Such data could be useful in the consideration of an information network among depository libraries.

Librarians at Pennsylvania State University have generally found that users expect the computer terminal to be a comprehensive tool rather than only a terminal to search the catalog. Increased use of personal computers in schools and universities will probably either sustain this level of expectation or cause it to increase. Given this attitude, librarians need to focus on how future online catalogs should be structured. Users will likely expect an integrated system that will include not only the bibliographic citation, but also circulation information indicating the availability of the item. In addition, the user may want to call up a table of contents from the data base to determine if the item suits his research needs. Finally, if the material is not in the collection, the patron will want the system to identify if the item is in the collection of another library.

The ability to access the collections of other institutions through information networks could also affect the collection management policies of a particular library. The current rule of thumb is that about 20 percent of a collection is being utilized by about 80 percent of the users. This situation creates expensive warehousing costs for material that is rarely used. In the future, electronic dissemination of information could permit libraries to be more selective in acquiring materials for their collections. Librarians, however, need to remember the traditional cultural expectations of free education and open access to library collections, and "* * * as we move [toward] electronic dissemination applications, not to put an artificial barrier there that is totally predicated on payback systems."

In the area of Government documents, there is a need for greater control of bibliographic resources before moving toward a comprehensive system of electronic dissemination of information. Computer and telecommunications technologies are becoming pervasive in all sectors of our society and librarians need to be prepared to handle the opportunities and difficulties that the technology may present. The issues associated with these technologies need to be identified and examined so librarians can plan toward the goal of an electronic distribution system.

Current Usage and Effect of Computer Systems on Information Transfer in Libraries

Presented by: Jeanne Isacco
OCLC, Inc. and Chair, Depository Library Council
To the Public Printer
October 27, 1983

To understand automation in libraries, especially in depository libraries, one must look at several important variables. Factors such as size and type of library, budgetary resources, clientele, and philosophy of service cannot be looked at independently when analyzing usage and the effect of computer systems in libraries. These same factors must also be understood in investigating future automation efforts in libraries serving as depositories for Government publications.

To exemplify two of these variables, type and size of library, figures from the 1981 biannual survey of depository libraries show that of the current Government depository libraries, 20 percent are public libraries, 58 percent academic, 12 percent law, 2 percent Federal, and 3 percent State. In terms of size, 30 percent of the depository libraries have between 50,000 and 100,000 volumes in their libraries, 40 percent have between 150,000 and 500,000 volumes, and 21 percent have over 500,000 volumes. The size and nature of the collection, as well as the philosophy of service to the library's users, figure prominently in the selection of Government publications in depository libraries. According to the statistics obtained in the biannual survey of 1981, 57 percent of depository libraries selected less than half of the 5,000 items (or 46,000 individual publications) available.

Economic factors not only are critical in affecting and directing library automation, but also, potentially, could directly affect future automation efforts in depository libraries. In the current budgetary arena, libraries in both public and private sectors are competing with other departments and services for scarce dollars. In addition to the economic status of the parent institution or local community, other factors have added to budgetary difficulties. The uncertainty of future telecommunications costs remain a concern for many library administrators. At times administrators find themselves in the position of having to prioritize between automation expenditures and those for library materials and personnel. Library automation efforts often require reallocating existing resources. "A reallocation of existing resources is a very strong trend going on in libraries right now, as libraries cope with how to find automated systems." Some institutions are turning to users fees such as charges for library cards to defray rising costs. In the future, issues like "who pays for what and how much, plus whether information will be subsidized, are very large questions".

Automation in libraries generally began in the sixties and early seventies by automating bibliographic records. OCLC, WLN, RLIN, all developed during that time period. Next came the operational/transactional systems. These systems were developed to assist with work flows and the operations of libraries and to give administrators information on which to make decisions. There were some systems in existence prior to the midseventies, but the late seventies through the present have seen a significant increase in the number of operations available to libraries for operational systems. These systems generally follow the evolution of computerized systems from mainframe based to mini-based, and now to micro-based. The final type of data base currently found in libraries are those known as "numeric", "content", or "full text". These data bases currently contain source data or journal abstracts and articles. It is the third type of system which offers the most opportunities for accessing government information in an electronic format.

The trend toward expanded uses of automated systems in libraries is reflected in the growth and services offered by OCLC. When OCLC was "the only kid on the block," libraries realized the advantages of joining because OCLC helped streamline in-house operations and reduced cataloging costs. As OCLC has evolved, member libraries now can not only catalog, but also verify bibliographic data prior to ordering an item or request an item for interlibrary loan. Currently, OCLC and other similar bibliographic utilities are working on ways to interface with local operational systems, expand to other library functions, and move toward a more integrated concept of library automation. As expectations rise, technical skills become more proficient and the demand rises for accountability and higher quality of service in libraries. The arena in which library automation exists is dynamic and changing and is likely to be so for at least the next decade. Providing for gateway capabilities to access multilibrary collections using subject access and other approaches, thereby promoting greater resource sharing and networking among libraries is a next logical step in the evolution of automation in libraries. This will be a highly significant variable in using automation to access Government information.

Chemical Substances Information Network

Presented by: Dr. Sidney Siegal
Administrator, Chemical Substances Information Network
October 27, 1983

Congress passed the Toxic Substances Control Act (Public Law 94-469) to protect the public and the environment from exposure to hazardous chemicals. Section 10 of the act directed the Administrator of the Environmental Protection Agency (EPA) to establish an interagency committee to construct an efficient system for collecting and disseminating data submitted to the Administrator as required by the act. In addition, section 10 directed the Administrator to design and coordinate a system for the retrieval of toxicological and other scientific data. Section 25 of the act directed the Council on Environmental Quality to study the feasibility of instituting a standard classification system for chemical substances, as well as a standard means for storing and obtaining rapid access to chemical information.

With this legal mandate, work began on the Chemical Substances Information Network (CSIN) system. A contractor, Computer Corp. of America, studied the information reporting "burden" imposed by the Toxic Substances Control Act on 20 organizations in the public and private sectors. Based on these findings, a configuration for an electronic retrieval system was adopted. In the present system, a powerful minicomputer serves as the "manager." The user can query the system with any terminal; the query is sent via telephone line to the "manager" which serves as an interface and reroutes the query to the appropriate distant resource. The relevant records then are retrieved, returned to the minicomputer, and transferred to the user.

To date, CSIN has trained 110 organizations or 400 individuals to use this distributed network. The system is used between 250 and 300 hours per month or about 700 individual sessions per month. Studies indicate that under certain situations, productivity has increased from 20 to 50 percent. By the end of fiscal year 1984, the costs for research and development and maintenance will reach approximately $7 million. Operational costs per year to the two contractors total approximately $1.2 million.

The technology used to install CSIN could be transferred to Federal sector efforts to assist in the sharing of data and information both within agencies and between agencies. "* * * (M)any agencies of government do not have [their] data and information acts together. It is in disarray for what they have generated internally * * * and for further use."

Libraries and Electronic Services

Presented by: Kenneth E. Dowlin
Director of Pikes Peak Library District
Colorado Springs, CO
November 16, 1983

The current shift from an industrial age to an "information age" in the United States will affect all segments of society including libraries. Today, electronic products are the only major product group on the worldwide market that continue to decrease in cost and increase in capability. Microcomputers also are becoming more widely available and are appearing in an ever-increasing number of homes. Some experts have predicted that sales of personal computers in 1983 will exceed $3 billion which is more than three times the money that the Nation spends on public library service in a year. In addition, the number of online bibliographic data bases, such as Lockheed, and information data bases, such as Compu-Serve, continues to grow.

With advances in computer and telecommunications technologies and decreases in their costs, the library community can afford to incorporate these technologies into their operations. "Costs are no longer justified as a reason for not using computers." The increases in the number of personal computers and information services, as well as the growth in communications channels, such as cable television systems and direct broadcast satellites, have created a challenge to the public library's role as the community's information center. These inroads into the library's market share come at a time when the need for information by the public has increased. Although many libraries have converted to automated systems and have joined networks, in general "We have tended to take a business as usual approach * * *" in broad consideration to information technology. Library administrators and decisionmakers need to be aware of the influence of computers and telecommunications on societal trends in order to adapt operations and services for their users.

The Pike's Peak Library District has incorporated information technology into their operations as part of their mission to serve as the community's information center. The main public library, seven branches, and three mobile units serve a population of 300,000—primarily concentrated in Colorado Springs—in an area of 10,000 square miles. The library's main computer is used as a general purpose support tool for the entire organization. Currently, there are 100 terminals for 100 employees. To promote their function as an information center, several online files have been created in addition to their online catalog file: current community events; clubs and organizations; agencies; adult education courses; day care centers; and a car-pooling system. Personal computer owners can access several of these files from their homes as well as the catalogs of the University of Colorado Springs and the Air Force Academy.

The expanded applications of computer and telecommunications technologies in this setting have served as a "* * * tremendous change instrument, because you not only change the operations or the mechanisms within that organization, [but] you [also] change the whole tone of the organization if you implement a major new technology."

Future Directions of Technology and the Information Marketplace

Presented by: Dr. Michael L. Dertouzos
Director, Laboratory for Computer Science
Massachusetts Institute of Technology
November 16, 1983

The United States is experiencing an information revolution that will affect our society more profoundly than the industrial revolution. The information revolution will have far-reaching geopolitical implications. "The countries or country that has the increased leadership and ability in information technology will have * * * increased geopolitical influence and controls throughout the world."

The growing dependence of U.S. society and the economy on information products and services will have an impact on the future role of libraries, including depository libraries. At present, the information marketplace is evolving at two levels. Companies and organizations are linking computers within their own institutions to form intraorganizational systems to exchange memos and messages and to perform management information tasks. This activity has occurred in companies for the past several years. At the next level, corporations are forming interorganizational systems for networking. Activity in this area, however, is evolving more slowly due to technical problems of interfacing different systems as well as administrative difficulties. The two areas of intraorganizational and interorganizational personal communications equipment—along with software services—form the base of the current information marketplace. Parallel to these activities is the growth of intrapersonal systems or microcomputers in the home.

As the information marketplace continues to expand, information will increasingly be viewed as a commodity that is tailored to the needs of the individual. This trend is evident in data base systems such as LEXIS which provides tailored information to lawyers. This direction is important in determining what kinds of information should be made available to depository libraries in the future, and what level of service should be provided. In addition, other issues need to be examined by policymakers: should libraries make available to the public gross amounts of raw information or tailor the services to the needs of the individal; if the Government provides tailored information, should there be a charge for the "informational labor;" should Government offer information services if similar services are offered by the private sector; what security precautions will be taken to protect against unauthorized tampering in electronic dissemination systems; and how will software be protected from illegal copying?

Another factor in the growth of the information marketplace will be advances in machine intelligence. Today, computer scientists have developed "expert systems" which give advice and make decisions in specific subject areas such as medicine. Unlike a book, expert systems can tailor information to the needs of the individual. These types of intelligent systems will continue to expand and will have a substantial influence on information services in the future.

Information can no longer be considered a second-class citizen to goods; instead, it is increasingly being viewed as a tailored commodity that has value attached to its generation, transformation, and sale. Depository libraries need to consider the changing nature of information as well as the need to deliver it in a timely, efficient manner. "It is unquestionable in my mind if we don't provide that, then the Government will be pulling a horse and carriage while the rest of the world will be driving a [sports car] on the highway. We have to provide electronic information."

Libraries and Electronic Information Systems and Services: A National Overview

Presented by: Dr. Toni Carbo Bearman
Executive Director
National Commission on
Libraries and Information Science
November 17, 1983

The National Commission on Libraries and Information Science (NCLIS) was established by law in 1970 (Public Law 91-345) as a permanent, independent agency to advise the executive and legislative branches on library and information policy. To fulfill its charge, NCLIS plays four major roles in the field of library and information science: resident expert to Members of Congress and the executive branch; honest broker to convene appropriate individuals to focus on common problems and recommend solutions; forum for the entire information community including State and local governments, and the private sector; and catalyst to identify and offer concrete solutions to problems. Recently, NCLIS has worked in a variety of areas including, public sector/private sector interaction in providing information services, and the impact of the proposed sale of land and weather satellites on the archiving of the data produced by these satellites.

As part of its mission to advise on matters of library and information policy, NCLIS tracks statistics on the number and types of libraries in the United States. Today, there are approximately 8,500 public libraries in the Nation and a total of 71,000 outlets such as branch libraries and bookmobiles. In addition, the United States has 3,122 academic libraries, more than 85,000 school libraries, and 12,410 special libraries. When the figures are aggregated, the typical U.S. library serves fewer than 25,000 people, employs three librarians, and has a budget of less than $50,000.

NCLIS also maintains statistics on sources of funding for libraries as well as categories of library expenditures to gain a perspective on the future direction and financial status of libraries. Public libraries get 75 percent of funds from local taxes, 6.6 percent from State funds, and 8.8 percent from Federal funds; the remainder is obtained from fees, fines, and donations. Of these funds 58 percent goes to salaries, 15.7 percent to materials, and 11.7 percent to operate the plant. College and university libraries spend 60 percent of their budgets on salaries, and 30 percent on books and other library materials.

The statistics on the number of libraries in the United States are impressive, particularly at a time when some individuals claim that in the future "* * * we won't need libraries, everyone will have information delivered to their homes. * * *" In an attempt to assess the accuracy of such statements, NCLIS recently examined the impact of technology on the information environment during the next few years.

One major area of focus in the study was publishing and the trend toward "electronic journals." Although experience with the first electronic journal revealed difficulties, such as reluctance by authors to submit articles, a study by Graddon indicated that electronic journals are going to increase significantly. The current print base system for dissemination is approaching its limits in terms of size and cost. In addition, the peer review process in publishing causes substantial delays and decreases the value of paper publications. Electronic publishing overcomes these problems and permits readers to view articles selectively rather than pay for entire journals in which a majority of the articles are of no interest.

The transition from traditional to electronic publishing is occuring in three phases. First, computers are used to produce traditional publications in print form. The second state is the emergence of publications that exist only in electronic form. The final phase will be the replacement of print by information in electronic form. An Adelphi study predicted that by the year 2000, 50 percent of all reference books are going to be only in electronic format, while 90 percent of new technical reports and 50 percent of abstracting/indexing services will be in electronic form.

Other technologies that are likely to affect future library services include videotext, or two-way interactive home information systems, and videodisks. Although information technologies appear to be evolving at a rapid pace, "* * * it is important to remember that it is not 'either/or' and that we need the combination of the different means of providing the information. Printed information is going to be around a long time."

Value of Information

Presented by: Donald King
President, King Research
November 17, 1983

Over the past 8 years, King Research has performed about 250 studies on most aspects of information transfer, the technology that is involved, and the costs. Yet, a study of the "value of information" was not undertaken until 2 years ago when the Department of Energy asked King Research to work in this area. Assessing the value of information is an important factor in determining how much of this value is contributed by libraries.

In a society increasingly dependent on information products and services, the value of information is often misunderstood or downplayed. "Information is a strange phenomenon that we have not been able to arrive at a consensus as to what it really is. What we do know is that information is similar to food, air, and other necessities of life in that we as humans cannot function well without it. Yet frequently we take information for granted. We overlook how essential information is to nearly every facet of our lives." As nations pass from the industrial age into the information age, people are increasingly dependent upon information to perform their work or process information as their principal work activity. Today, over one-half of the work force is engaged in the information sector. Many governments, such as the United States, spend billions of dollars in generating, processing, and using information. In addition, information plays an important role in international exchange, cooperation, and understanding.

To handle the production, distribution, maintenance, and access to the growing amount of information, an information community has arisen. The community is comprised of publishers, information clearinghouses, educational institutions, broadcast companies, libraries, and information units that serve information creators, processors, and users. Some observers estimate that about 2 million information professionals work in these places.

"* * * (I)n light of the phenomenal growth of information and the information sector, growth of the library community appears to be lagging behind. There are those in the library community who spell 'doom and gloom' for librarianship." Yet statistics indicate that the library field is not faring as badly as many suggest. A study by King Research reveals that between 1978 and 1982 employment of librarians grew 8 percent. Although this represents a growth of only 1.6 percent per year, further examination of the statistics indicates that the growth in the number of libraries closely parallels the growth in the number of constituents served.

Despite the roughly parallel growth between the number of librarians and constituents, greater demands are being placed on current library services for a number of reasons. First, library users are becoming more information intensive users. Second, the amount of words produced is growing about 9 percent per year or double every 7 years; traditionally library materials have doubled approximately every 15 years. Thus, libraries must store and provide access to a rapidly increasing amount of materials. Third, the information hungry population is demanding larger collections as well as more kinds of services. Fourth, not only is the collection size of traditional materials rapidly growing, but more types of information materials are desired by users. Finally, libraries are being asked to supply access to new technologies, such as online terminals.

These new demands have strained the economic resources of many libraries. The problem is further exacerbated when decisionmakers continue to allocate budgets by the number of constituents served and do not take into account the increasing demands on libraries. Thus, the need to assess the value of information services and products becomes even more critical in a time of budgetary constraints.

King Research has performed several studies that show the value of information services and products in science and technology. One finding indicates that reading scientific materials, on the average, saves scientists about $1,000 in time and equipment. With over 300 million readings of articles and technical reports annually, this reaches a value of $300 billion. In examining the value of library services and products, "It is abundantly clear that library services and products make a significant contribution to the value of scientific and technical information."

Electronic Systems at U.S. Department of Agriculture

Presented by: Stan W. Prochaska
Deputy Director of Current Information
U.S. Department of Agriculture (USDA)

Sam Waters, Associate Director
National Agriculture Library

Eugene Farkas
National Agriculture Library

David Hoyt, Leader Training and Education
National Agriculture Library

Ovid Bay, Director of Information
USDA Extension Service
November 17, 1983

In 1862, Congress established the U.S. Department of Agriculture [USDA] to collect and disseminate useful information to the Nation's agricultural community. To fulfill its mission, the Department traditionally has distributed such items as news releases, outlook and situation reports, and crop and livestock reports to their constituents in print form. Two years ago, the Department decided to upgrade distribution of news releases and perishable or time-sensitive material from surface mail and telephone facsimile to instantaneous transmission over an electronic messaging network. The

USDA electronic mail network allows individuals in regional information offices, land grant universities, and state departments of agriculture to send messages and receive information. In addition, the system is capable of handling automatic distribution lists of up to 500 entries.

More recently, the Department has decided to explore the possibility of establishing an information base or data base to allow users to access only those items that they need. By allowing users to access a data base of current, perishable material, USDA's Office of Information would save time and money by not having to maintain various electronic distribution lists for delivery of information. With the current electronic messaging system, all material is sent to everyone on the distribution lists.

Today, users can access the electronic network for several types of information including, crop report summaries, national and regional news releases, crop and livestock statistical reports and summaries, outlook and situation report summaries, Foreign Agricultural Service reports, economic report abstracts, and a daily executive news digest. Statistics for online service during October 1983 revealed that the service received more than 2,500 hits during the month or an averge of 120 hits per day for each of the 20 working days. More than half of the 155 users during that month were land grant university extension services, agricultural experiment stations, and district and county extension services. A third of the users were USDA executive offices, program agencies, and information public affairs offices both in Washington and in the field. The most popular menu item that month was the daily news digest. The system has produced cost savings. If the USDA had mailed printed material in response to the 2,500 hits, postage alone would have cost $500; the cost for loading data into the computer was approximately $200. In addition, the users received the data immediately.

To futher facilitate dissemination of USDA information, the Economic Research Service and the Foreign Agricultural Service within the Department offer full text outlook and situation reports and trade leads through the University of Nebraska's AGNET online retrieval system. Other activity centers on plans to contract with the private sector to develop and operate a single computerized information service for all perishable data. According to USDA plans, the vendor would supply the information at two levels of service: a high-speed service for firms that want batches of data to retail in their own fashion; and an online service similar to the current electronic system for the land grant universities, state departments of agriculture, and farm organizations who are willing to access and receive information at lower speeds.

The National Agriculture Library (NAL) within the Department also has responded to the needs of its users by providing access to its collections and indexes through electronic means. The NAL has relied on commercial information retrieval services to allow users to remotely access citations in the AGRICOLA (agricultural online access) system. In addition, the Library is testing new uses of information technology such as a pilot project for a full test data base. Bibliographic Retrieval Service has signed a contract to develop a private, online, remotely accessible data base consisting of the full text of selected books, articles, and pamphlets authored or published by the Department of Agriculture.

DOE Technical Information Management Program

Presentation Submitted by William M. Vaden
Technical Information Center
Oak Ridge, TN
December 14, 1983

A full day's presentation to the Ad Hoc Committee was made at the Department of Energy's Forrestal Building on December 14, 1983, during which the Department's Technical Information Management Program was described. The agenda covered the following areas:

(a) A systems approach for DOE R&D information management by Joseph G. Coyne, Manager, Technical Information Center (TIC), Oak Ridge;

(b) DOE/TIC information management systems, comprised of discussions and demonstrations by Dora Moneyhun and Julia Redford, TIC, Oak Ridge;

(c) Bibliographic data bases and announcement media by Dora Moneyhun;

(d) DOE/TIC information research projects demonstration and discussion by Julia Redford and Dora Moneyhun; and

(e) DOE integrated information network planning by Viktor E. Hampel, Lawrence Livermore National Laboratory.

In addition, a video training presentation was provided to the Committee on the introduction and use of DOE/RECON, an online information retrieval system managed by DOE's Technical Information Center.

The following are brief descriptions of the TIC staff presentations.

Departmental Obligations

Under DOE enabling legislation, as well as the Atomic Energy Act and other statutes in force, the DOE has certain obligations with regard to scientific and technical information resources management. DOE Order 1430.1 defines responsibilities for managing scientific and technical information developed or needed by the Department's R&D programs. The Technical Information Management Program (TIMP), reports to the Director of Administration. The operating program management is located within the Office of Scientific and Technical Information (OSTI) at the DOE Technical Information Center (TIC) facility at Oak Ridge, TN.

Program Responsibilities

The TIMP has three major program responsibilities:

First, it has a program direction responsibility. This includes the development of specific DOE-wide policies, procedures, and guidelines relating to scientific and technical information (STI) either developed by or purchased using DOE funds.

Second, it has an oversight and appraisal responsibility to ensure that information resource management policies are effectively carried out. Both of these responsibilities cover activities carried out by DOE program offices as well as by contractors. Because of the importance of technological advances as a national resource and international commodity, TIMP management represents DOE in developing international information exchange policy from the technical program perspective. TIMP management monitors laws, regulations, and executive orders to ensure that the handling of DOE scientific and technical information is in the best interests of the Department and the Nation.

The third major program responsibility is to ensure that the Technical Information Center is maintained on behalf of all programs to provide management accountability for DOE-funded information deliverables, to make accessible the results of worldwide investment in energy R&D to support research program productivity, and to ensure that DOE receives the maximum return on its research dollar invested.

Resources

The Office of Scientific and Technical Information has extensive information and technical expertise built over three decades. Information professionals executing OSTI policies and programs have backgrounds that include the physical and life sciences, engineering, information science and technology, computer science, editing and publishing, technology transfer, librarianship, and management and administration. The Technical Information Center operations are housed in a fully secured facility to ensure proper protection of classified and sensitive information. A modern computer facility is maintained with a more than $17 million investment in hardware and systems.

In addition to Government-owned and -operated resources, the TIMP manages significant programs at four of the major DOE National Laboratories. There are two major onsite contractors in Oak Ridge and a number of special contracts with universities and other private sector companies.

The TIMP data bases provide access to over 2 million developments in energy science and technology dating back to the earliest beginnings of Federal energy programs such as nuclear, fusion, and coal. Information on worldwide energy advances is obtained through participation in international multilateral information exchange programs such as the International Atomic Energy Agency's International Nuclear Information System (IAEA/INIS), country-to-country bilateral agreements, interagency exchange within the United States, and contracts with the private sector.

Products and Services

To facilitate access and use of the existing knowledge base by DOE researchers, the TIMP maintains a national online information retrieval network (DOE/RECON); produces current awareness journals and bibliographies; oversees a clearinghouse for DOE-developed computer applications software; manages the central receipt, control, and distribution system for DOE technical publications; maintains a centralized DOE research-in-progress directory; and provides customized publications and information services to program offices upon request. TIMP supports the Department's technology transfer responsibilities through issuance of Energygrams and maintenance of data base systems. Public access to the results of DOE-funded R&D is managed using the Department of Commerce outlet, the National Technical Information Service, and, as appropriate, the Government Printing Office. As a result of these public access arrangements, the energy data base is available commercially through major online data base vendors. To ensure effective information resources management and the application of the most advanced technologies, TIMP funds highly selective applied research in information science and technology. Networking concepts for both inter- and intra-agency information resources sharing are being developed.

Data Bases.—Some of the major data bases available for search are:

- The Energy Data Base (EDB), the world's largest and most comprehensive data base on energy, contains in excess of 1 million references to reports, journal articles, patents, translations, dissertations, books or monographs, conference papers, and engineering materials from worldwide sources. Information is now being added at the rate of about 200,000 items per year, and EDB is updated semimonthly. The EDB contains unclassified nuclear information collected since 1976.
- Nuclear Science Abstracts (NSA) data base results from unclassified nuclear information processed by the center from 1967 to June 30, 1976 (over 550,000 citations), which was announced in Nuclear Science Abstracts, vols. 21 through 36.
- Nuclear Science Abstracts II (NSAII) contains unclassified nuclear information processed by the center from 1947 through 1966 for announcement in Nuclear Science Abstracts, vols. 1 through 201. This information is currently being digitized and will be added to the DOE/RECON system in early 1984.
- The Research-In-Progress (RIP) file describes the new and ongoing energy and energy-related research projects carried out or sponsored by DOE. Principal investigator, performing organizations, contract number, technical monitor, location, and a description of the research are included for each record.

- The non-DOE RIP file contains descriptions of energy research being conducted by other government agencies, domestic organizations, and countries with which the center maintains bilateral exchange agreements.

Current awareness publications.—Journals and bulletins contain references to current scientific and technical energy information compiled either by type and source or by subject area. Journals, which cover broad subject areas and include complete indexing, are supplied to libraries and information centers. Bulletins, which cover narrow specialized areas and contain abstracts only, are supplied to individual researchers in the subject areas covered.

- Energy Research Abstracts (ERA), a semimonthly abstract journal covering DOE-sponsored technical literature and reports from energy research sponsored by government agencies outside DOE, by international and foreign organizations, by State governments, or by industry. Indexes for ERA, which are cumulated semiannually, are available in both printed and microfiche forms. Major libraries at each installation receiving ERA receive enough printed copies of the indexes for each library on the site.
- Energy Abstracts for Policy Analysis, a monthly abstract journal covering literature on energy analysis, policy, and development and other energy information of interest to policymakers and managers.
- DOE Patents Available for Licensing, a semiannual journal containing abstracts of and indexes to DOE-owned U.S. patents and patent applications for which DOE is prepared to grant exclusive or nonexclusive revocable licenses.
- Nuclear Safety, a bimonthly technical review journal containing articles by nationally and internationally recognized authorities on the safety aspects of reactors and the nuclear fuel cycle, including mining, fuel reprocessing, storage, and shipment.
- Coal Abstracts, a monthly journal of the International Energy Agency's Coal Research Technical Information Service, which is available from the Center.
- Date journals, published monthly:
    - Current Energy Patents (CEP)
    - Energy and the Environment (EAE)
    - Fossil Energy Update (FEU)
    - Fusion Energy Update (CFU)
    - Solar Energy Update (SEU)
- Date bulletins, published semimonthly:
    - Direct Energy Conversion (DEC)
    - Geothermal Energy Technology (GET)
    - Nuclear Fuel Cycle (NFC)
    - Nuclear Reactor Safety (NRS)
    - Radioactive Waste Management (RWM)
- Energy Meetings, a monthly bulletin of information on conferences, symposia, et cetera, sponsored by DOE or its contractors or relevant to DOE programs.
- Atomindex, a semimonthly abstract journal of the International Atomic Energy Agency's International Nuclear Information System, is available from UNIPUB (345 Park Avenue South, New York, NY 10010). (For 1983 only, copies are available from the center.)

Computer software.—Computer software packages prepared by DOE and its contractors are collected, analyzed, tested, and made available for license from the National Energy Software Center (NESC), which is operated for TIC by the Argonne National Laboratory. A data base containing descriptions of software packages is accessible on DOE/RECON. (For additional information, contact NESC, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, IL 60439.)

Intelligent Gateway Computers Unlock the Wealth of Federal Information

Viktor E. Hampel
December 14, 1983

Intelligent Gateway Computers are a practical tool for the integration and use of distributed Federal information resources. By providing automated, and controlled access to these resources over Federal and commercial voice and data lines, these high-technology machines accomplish with ease a feat previously possible only with expensive, dedicated communication networks. Intelligent gateways can be used to link authorized users with information centers anywhere in the country. Users simply choose from an online directory the desired resource. The gateway then connects them automatically over redundant communication lines and activates the selected data bank.

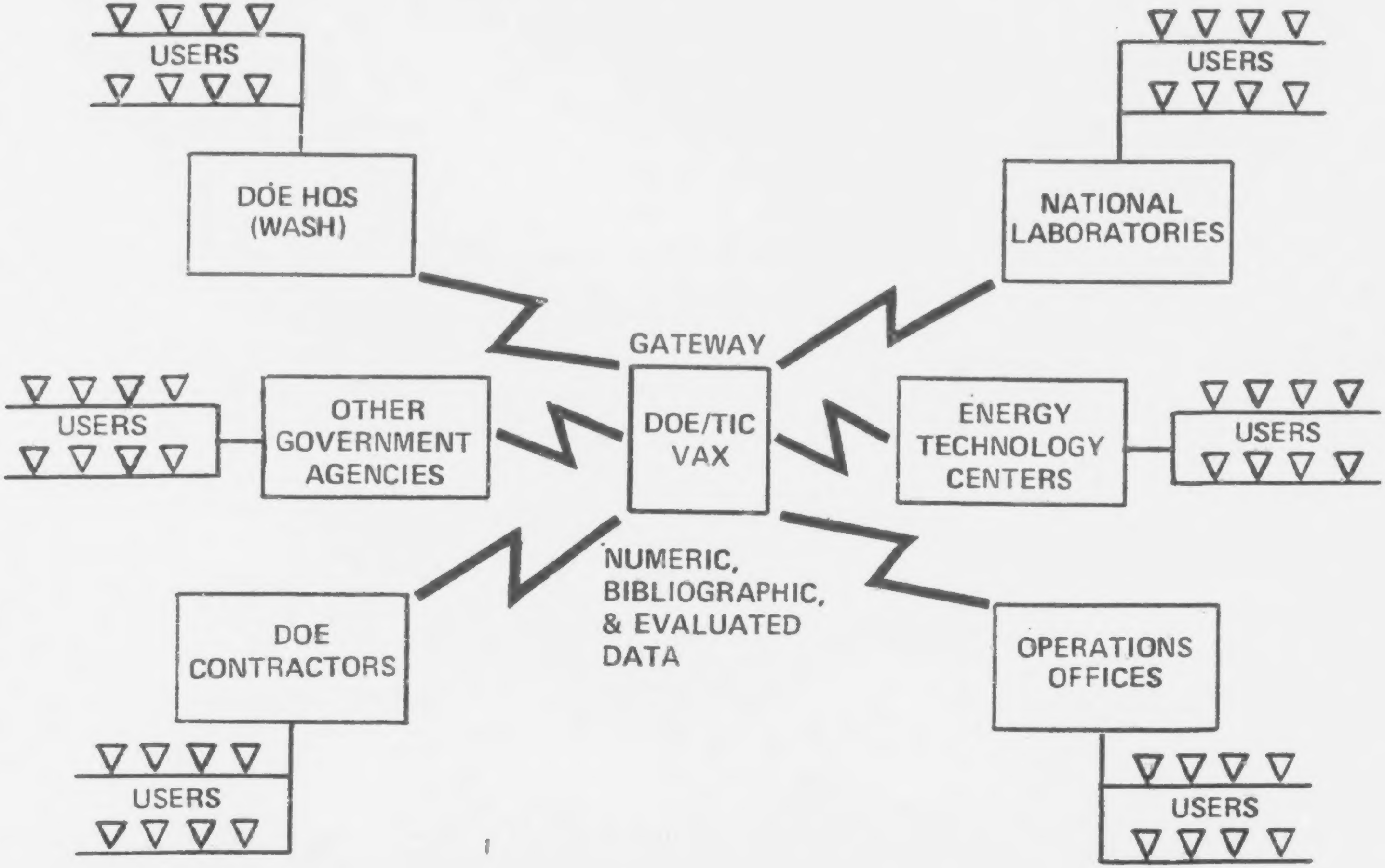
Once connected, users today must be familiar with the command language of the target machine. Tomorrow, they may benefit from a common command language (CCL) and automated translation of the extracted information into common formats. However, it is already possible now to download desired information, aggregate it into new composite forms, and postprocess it for the extraction of intelligence, previously available only with considerable manual effort and time delay.

By the end of the decade, when broad-band satellite communication networks will carry voice, data, and video-scanned pages across continents, scientific, technical, and econometric information will become the primary national resource in the postindustrial era of informatics.

At the Lawrence Livermore National Laboratory (LLNL), we have been developing the prototype of an intelligent gateway computer since 1975. Our work is supported by several Federal agencies and military services. The Intelligent Gateway Computer (IGC) of the LLNL technology information system (TIS) is being considered as the key building block for an Information Center Network (ICN), linking the immense information resources of the Department of Energy Technical Information Center (DOE/TIC), under whose auspices this work is being carried out, with the corresponding information centers of the Department of Defense (DOD/DTIC), and NASA. Computer-aided design and manufacturing programs at the National Laboratories and among Federal agencies face a similar problem. Here, intelligent gateway computers also show promise for the integration of their dissimilar and geographically distributed resources in a controlled and secure manner. This should make it possible to accelerate information exchange and technology transfer among the Federal agencies, their prime contractors, and industry.

DOE Technical Information Center

DOE INTEGRATED INFORMATION NETWORK



USERS

DOE HQS (WASH)

USERS

NATIONAL LABORATORIES

GATEWAY

USERS

OTHER GOVERNMENT AGENCIES

DOE/TIC VAX

ENERGY TECHNOLOGY CENTERS

USERS

NUMERIC, BIBLIOGRAPHIC, & EVALUATED DATA

DOE CONTRACTORS

USERS

OPERATIONS OFFICES

USERS

Joint Committee on Printing Revised Regulations and Role in New Technology

Presented by: Thomas Kleis
Staff Director, Joint Committee on Printing
December 15, 1983

In November 1983, the Joint Committee on Printing published proposed changes to the Committee's printing and binding regulations. The modifications respond to advances in computer and telecommunications technologies and their impact on processing and disseminating information. By embracing these new technologies, the Joint Committee on Printing seeks to replace existing micromanagement procedures with oversight and policymaking functions. "* * * It was essential that we get into the 20th century ourselves and recognize the great change in the flow of information and how the technology is supporting it. So our regulations took shape basically because of that recognition."

The proposed regulations focus on two areas: improving the management of information from its creation to its distribution; and increasing the access to Government information by all potential users. Increasingly, the management of information encompasses not only printing and publishing, but also automatic data processing (ADP) equipment to manipulate the information. The proposed changes acknowledge the merger between printing and publishing and computers and telecommunications by upgrading the Central Printing and Publications Management Organization in Federal departments to the policymaking level for all information. This approach complements the concept of information resources manager called for in the Paperwork Reduction Act. In this way, the information resources manager could use the expertise of the printer to improve his own system, while the printer could tap the expertise of the ADP staff for his duties. "The ADP areas are controlling to a large extent the information in the Government, and we think the printer should be in there with them."

Since the management of printing for the executive and legislative branches is the responsibility of the Government Printing Office (GPO), the regulations are designed to strengthen the role of that organization. As printing and publishing become more decentralized, centralized management will be necessary to eliminate duplication, neglect, waste, and delay—the goals set forth in title 44, United States Code, section 103. The experience of GPO could enable that institution to be the leader in the future for disseminating Government information. To fulfill that leadership, GPO must incorporate new information technologies. "* * * (W)e see a very strong leadership role in procurement and information dissemination through the Superintendent of Documents. * * *"

The second major focus of the proposed regulation centers on increasing access to information. The proposed changes are designed to ensure that individual and corporate taxpayers have access to Government information at no charge or at the lowest possible price. In addition, the revised regulations include new provisions to guarantee that all Government publications are distributed to depository libraries, except for those documents without public interest or educational value or those classified for national security reasons.

"* * * (A) lot of people have talked about revising title 44, and certain parts of it I think do need to be revised * * * But, the only thing different in my mind in a major way between what title 44 said in 1895 and now is really the difference in media. I think the concepts were clear in that Printing Act [of 1895] that they wanted the public to have access to Government information and they prescribed certain means to do it through the Government Printing Office, with the oversight of the Joint Committee on Printing. * * *"

APPENDIX 3

Federal Depository Libraries Workshop Summary

Organized by

Office of Technology Assessment
Communication and Information Technologies Program
February 1, 1984

November 1, 1983.

Mr. John H. Gibbons,
Director, Office of Technology Assessment,
600 Pennsylvania Avenue, SE.,
Washington, DC 20003.

Dear Mr. Gibbons: The Joint Committee on Printing has recently initiated a study of the feasibility of providing access to Federal information in electronic form to the Federal Depository Libraries. I have appointed an Ad Hoc Advisory Committee to examine the state of technology and advise the Joint Committee on Printing about providing such access.

I understand that OTA, in some of its assessments, has been looking at a number of issues related to Federal information policy. As a result, I am requesting your assistance with our work. Specifically, I would like OTA to assist in convening a workship early in the next calendar year. The session, that would include both members of our advisory committee and outside experts selected by OTA, would look at questions such as the following:

(1) How will information in electronic format affect the information delivery systems of public, academic, and other libraries?

(2) What will be the principal means of technical information transfer used by scientists, engineers, the business community, and other citizens 10 years from now?

(3) As the cost of producing and distributing printed publications goes up, and the cost of electronic equipment and telecommunications goes down, will it become more economical to distribute information in electronic format to the depository libraries? When might such a situation occur? What factors will affect these costs?

(4) How will citizens access machine readable data files if they are made available to or through depository libraries?

(5) Are there established networks that could be used in making Government produced machine readable data files available to depository libraries?

(6) What options are available for placing the necessary equipment in depository libraries, that would allow them to access electronic information generated by the Federal Government?

(7) What is the outlook for including high resolution graphics with text in a single data base?

Since the Congressional Research Service also has experience with Federal information policy, I am also requesting that CRS coordinate closely with OTA in planning and conducting this workshop, and that, where appropriate GAO be involved in the work of this effort.

Finally, I request that OTA review the draft report written by the Ad Hoc Advisory Committee to comment on its technical and analytical content.

Sincerely,

Augustus F. Hawkins, *Chairman.*

Question 1. How will information in electronic format affect the information delivery systems of public, academic, and other libraries?

Speaker: *Pat Schuman*, president of Neal-Schuman Publishers.

Traditionally libraries and librarians are considered "the gatekeepers of knowledge." Today the "publishers, producers, and the disseminators of information are the real gatekeepers, be it Government or the private sector." However, it is not certain how these new gatekeepers are handling their new information responsibilities. For example, the evidence is not clear that the new information electronic delivery systems will necessarily make the distribution of data from the Government cheaper, quicker, and more convenient. Presently, much data for the 1980 census is only available on expensive tapes, affordable to only the private sector. Usually census data are available to the public within approximately 1 year.

Clearly these new technologies represent unparalleled opportunities for information dissemination. These changes will have a profound impact on our libraries and society as well. One such change presently occurring is that "information production and delivery often cross lines between the public and private sector, and the conflicting philosophies of free access and free markets are escalating."

Because certain segments of our society possess the funds and sophistication required to utilize the new information technologies they are already receiving its benefits. However, what about those in our society who lack both the funds and the necessary sophistication? Is access to information a right of every individual? If it is, how will that right be upheld? What will be the mechanisms for ensuring access? Does the first amendment apply to all forms of information? What are the respective roles of the Government and the private sector? When should or do the laws of the marketplace apply?

Traditionally, libraries have been viewed as public institutions which provide users free access to a wide variety of materials and information necessary for democratic societies to grow and flourish. However, if transmission of Government information in electronic form is left solely to the private sector, those who cannot pay will not have access. The question is, "What is our commitment to the public interest and the public's right to know?"

If it is agreed that now, more than ever, information is necessary for an informed society, then it may not be wise to rely on what seems profitable in the marketplace for disseminating information. Rather, it would be healthier if the Government adopted an information policy that would acknowledge the role of information in a free society. Further, the creation, storage and distribution of information is changing so rapidly, traditional assumptions about public access to information are deteriorating at a frightening pace. If information is a public good and informed individuals contribute to the benefit of society as a whole, then access to information must be guaranteed by policy.

How can the gap between the information rich and the information poor be closed? One of the most effective ways of achieving this is through our depository library system. Coordinated networks linking all types of libraries can give individuals equity of access to the broad range of legal, technical, regulatory, scientific, medical, social, cultural and other information necessary to meet their needs. However, the cost of such systems may require that the Government subsidize them.

Question 2. What will be the principal means of technical information transfer used by scientists, engineers, the business community, and other citizens 10 years from now?

Speaker: *Richard W. Boss*, senior consultant, Information System Consultants, Inc.

Before looking at information transfer in the future, it is important to review some of the constraints that may initially slow down the adoption of the new technology. These include:

1. The development and maturation of the technology and the need to develop standardization among the various technologies.
2. The cost of the high-resolution screens that are required to display print and graphic information.
3. Various companies in the market that control the technologies and that have the techniques and expertise for electronic publishing, but prefer to put their money elsewhere.
4. Legal constraints of various kinds, even though there is a climate of deregulation.
5. Attitudinal considerations, including the reluctance of publishers to distribute their information in electronic forms, such as video disk.
6. Finally physiological constraints, such as the use of a vertical screen rather than a printed page.

What is happening with the 1382 depository libraries across the United States? We know that "approximately 40 percent of academic and 25 percent of public libraries in this country are doing remote data base searching of bibliographic data bases." There is also a considerable amount of full-text statistical searching going on. "These are data bases that are not bibliographic or that do not point to information, but that actually contain statistical information."

Full-text articles are also available on-line, but far fewer in number. Normally these involve the use of dedicated terminals, such as LEXIS, NEXIS, and the New York Times data bank. Mead Data, the largest purveyor of services of this kind, is allegedly the only full-text data base service that has consistently been profitable over the last 5 years. There are full-text reference type data bases, such as the Source, Compu-Serve, Dow-Jones, and Associated Press. These reference services are available online, but are primarily used by individuals rather than institutions.

Another full-text reference type of technology is video-text. There have been some 250 video-text trials in the United States, sponsored primarily by news media, either print or television. At this time only one of those 250 trials has turned into an operational program in Broward and Dade Counties in Florida. So far the volume of use, the number of users and their activity levels are well below expectations.

In the next 12 to 24 months, libraries will be spending their money to obtain video disks. These video disks often are called laser disks and involve a laser shining off the surface of the disk and reflecting the encoded information. The purchase of a video disk and a video disk drive—as peripheral devices to a microcomputer—will make it possible to search up to 2 million bibliographic records. Another application of this system might be to offer journal articles on a video disk.

On the more distant horizon is the optical digital disk which can be encoded and subsequently revised. Data bases stored on an optical digital disk could be shipped to a user to mount on a peripheral device hooked to a computer. Thus as updated information becomes available it can be sent to the user and the data could then be revised. Right now the major limitations are that optical digital disks cannot be replicated and do not have the same graphics drawing capabilities as video disks.

Finally, the reason why some in the commercial sector are moving slowly into electronic publishing on video disk is because they do not know where optical digital disk technology is going. It may be expected that for the next couple of years, the cost of optical disks will limit its use to wealthy clients.

Question 3. As the cost of producing and distributing printed publications goes up, and the cost of electronic equipment and telecommunications goes down, will it become more economical to distribute information in electronic format to the depository libraries? When might such a situation occur? What factors will affect these costs?

Speaker: *Joe Ford,* executive director, CAPCON Library Network, Washington, DC.

The main focus of this talk concerns the future of document delivery through and with library telecommunications applications. Fifteen years ago, there was a very large central computing system connecting remote dumb terminals. With this arrangement central systems performed all the activities, other than the keyboard work.

From those old systems there has been ever-increasing sophistication and ever-increasing integration of functions onto ever-smaller pieces of electronic components at the central site. And at the same time, as the components in the central system became smaller, they became more and more compatible with small systems which began to emerge at the user end. This resulted in movements away from very large central systems to distributed processing or "user friendly" systems. Thus, there is more and more power at the user end.

Nevertheless, what connects all of these various systems, for all intents and purposes, are pairs of copper wires. Although switching and computer applications in the switching, repeating, amplification, and control of telecommunications technology are extremely sophisticated, "nevertheless much of the medium of transmission remains twisted pairs of copper wire, and therein lies a problem for document delivery."

Right now the capacity of copper wire to deliver very large volumes of text and illustrative material is fairly limited (approximately 9,600 bits per second). Consequently, uncoupling from the copper wire network will become a necessity. In the near future integrated circuit capacity that will transmit both text and perhaps video at fairly high speeds will be another important development.

Presently, only the Fortune 100 companies are able to buy this new technology. But the technology is coming down in price and there are people in Washington that are ready to provide hundreds of channels through line-of-sight transmission systems.

What does this all mean for handling Federal documents in a machine-readable form? Washington, DC. may be one of the best places in the world for these new systems because it is perhaps the largest transmission/reception point for digital data in the world. Although this is going to require huge amounts of capital investment, there is a great opportunity for Government to go into partnership with private suppliers. In the Washington area there are potential suppliers such as GTE, MCI, and AT&T communications. GTE's Telenet, one of the big packet-switching networks, is essentially headquartered here. Therefore, Washington will more than likely become a center for multiplexed, multifaceted telecommunications networks.

The transition phase to rapidly more powerful transmission (at rates of from 19,000 to 56,000 bits per second), at lower bit-error rates, higher reliability, and longer distances is going to be very expensive. However, there will be a move away from pairs of copper wires to much more powerful, much higher-capacity data transmission capability. "The shape of the future is very murky in my mind; it is extremely high tech, extremely high cost, and extremely high capacity."

Individual libraries may not be able to afford a 56 kilobit or a 1.544-megabit data channel. However, a group of libraries or a group of end users may be able to afford the cost together. Consequently interesting and creative partnerships will emerge to make this happen.

Question 4. How will citizens access machine readable data files if they are available to or through depository libraries?

Speaker: *Dr. Wilfred Lancaster,* professor of library and information science, University of Illinois.

In trying to answer the question regarding citizen access to machine readable data files, there are four assumptions which will guide this talk. First, access is not just physical access, it also includes intellectual access to the content of the material. Second, the term "data files" is being used in a general sense. It really includes all kinds of information transmission, including text, tables, and so forth. Third, a large part of the documentation that is going to be transmitted is already or could easily be generated in machine readable form. Finally, if there are more efficient ways of transmitting Government information to potential users and to libraries, that function should not be limited to libraries.

Also it is important to remember that concern for the distribution of Government information is not "aimed at the overall general public, but rather to those gatekeepers who are the direct users of the information." Gatekeepers would include people such as Government officials, researchers, teachers, attorneys, physicians, and journalists.

The libraries play an important role in serving as institutional gatekeepers. However, there are some fundamental problems with this situation. First, most of the materials that are actually printed, distributed, and placed in the libraries are greatly underutilized. Second, with something like 1,400 depository libraries in operation the quality of the overall depository libraries is going to vary tremendously. Not all of them are going to offer a very high level of reference service. And finally, no matter how many depositories are created, this does not mean that Government information is readily accessible.

With regard to the possibility for electronic distribution of data files, it is important to distinguish between primary information sources (text, tables, etc.) and secondary sources (catalogs, indexes, and bibliographies of one kind or another).

Clearly there are many secondary sources of information machine readable form with accessibility through online networks. Making primary data accessible in some way is the key point. The focus needs to be on distributing in some form documentation in machine-readable form, whether it is on tape or optical disk. Such distribution would primarily be to institutions rather than to individuals.

On the other hand, "if we think about this primarily in terms of making data accessible through some kind of telecommunications and networking, then we can reach either the institutional environment or the individual environment." Thus the library could become a location where individuals could go to access machine readable data if these individuals did not have any home terminals. Reference services would be available, along with some high-speed print capability and perhaps the library could subsidize the costs to the individual.

However, the information seekers could bypass the library and access the data themselves from a central store, which would provide direct document delivery from the full text source. The use of the information could select the specific type of data wanted, examine it, and have it printed out. Further, when there are occasions for heeding expert advice the investigator could contact, via telecommunications, special reference center assistance. The reference center would not have to be in the same town or the same State.

Presently, there are two major problems confronting these new possibilities. First, as we discussed earlier, is the need for transmission of high quality graphics and the problems of who is going to subsidize whom. And secondly, it is quite clear that some time down the road, electronics is going to change the way information is presented. Instead of electronic distribution of paper, there will be information available through analog models, through animation, through sound, or a combination of these, and that is going to change the whole situation again.

Question 5. Are there established networks that could be used in making machine readable data files available to depository libraries?

Speaker: *Sally McCallum*, Assistant to the Director for Processing Systems Networks and Automation Planning, Library of Congress.

This talk focuses on two major areas. The first centers on how different Government agencies involved in the distribution of bibliographic data are actually doing it. And second, where do the agencies involved in the distribution of bibliographic data think they see things going in the future?

Within the Federal Government there are three kinds of network services to disseminate bibliographic data. First, there are the bibliographic utilities in the United States. These are large computer centers that get their Government data from agencies, such as the Library of Congress, the National Library of Medicine, and other cooperating agencies. These various agencies provide computerized access to their data. The data can be disseminated on magnetic tapes, which allow them to be redistributed if necessary. It is estimated that there are some 10,000 libraries that are served by the three largest bibliographic utilities.

There are also large search services such as Dialog and Lockheed, which are corporations or companies that put up a lot of different kinds of data bases and provide access, for a fee, to these data bases.

A third approach, in a few cases, is where the Government agency provides a network itself so it has terminal computer connections to its own data base that allow people in that agency to access the data base.

A look at four agencies illustrates how their data is disseminated and how it is accessed around the United States. At the Library of Congress there is an in-house network which allows data to be created internally. Searches of the data base are done by personnel of the Library of Congress and congressional offices. Within the Library of Congress reading rooms the public is allowed access to selected data bases. The Library also distributes its data on magnetic tape and then redistributes it through all the bibliographic utilities.

The National Technical Information Services (NTIS) is another large disseminator of citation data. They create their own data on their system, and then they lease it to other interested Government agencies. NTIS is also a broker for other Government agencies that create data bases and want to distribute them. For example, data that are created at DOE or EPA can be accessed by outside agencies providing further access to the data through NTIS.

The ERIC center creates its own data on its own system in the area of education and humanities. They, like the Library of Congress and the NTIS, distribute their tapes to other agenices at a cost equal to the reproduction of the tape. ERIC has an interesting directory that tells people where they can find a library that subscribes to Dialog or some similar search service which has the desired data base.

The National Library of Medicine is the only one of these four institutions that provides direct access to anyone who is qualified to search their data base. If the researcher has had proper training, the NLM will give him access to their data. They also distribute their data to the bibliographic utilities and make it available in the larger search systems.

Right now most of the services mentioned operate from a central computer center. Consequently, there is a need to have a terminal to access the desired service and often that means that a dedicated terminal of one kind or another is required. The bibliographic utilities generally require a certain type of terminal to complete various tasks.

However, right now the library world is working on a computer-to-computer link that is expected to be in place for testing and use later this year. This might make it possible to access more services through one source. Also, a lot of people are using micros as terminals. This may allow them to download or bring in more information accessed because of the microcapability.

Finally, one of the things that is going to come about due to computer-to-computer links is passthrough services. By subscribing to one particular service, subscribers are then allowed access to a certain number of other services at no additional cost. Right now several bibliographic utilities offer this, including OCLC. This eliminates the need for multiple kinds of terminals and expensive contracts with different vendors.

Question 6. What options are available for placing the necessary equipment in depository libraries, that would allow them to access electronic information generated by the Federal Government?

Speaker: *Judy McQueen*, senior consultant, Information System Consultants, Inc.

The problem in discussing this question is the difficulty of understanding the relationship between different types of equipment. For example, equipment requirements for accessing publications appear to range from approximately $100 for a microfilm reader to $40,000 for a high quality printing device. However, before purchasing any equipment there are several considerations that have to be kept in mind.

First, it is important to consider what the likely equipment requirements are for various forms of information that are already available, for example, in machine readable form. Further, it is necessary to anticipate future technological equipment needs.

Second, would technological change and changes associated with accessing information alter the actual shape and form of the depository library program as it now exists?

Third, definitions of equipment also may change. Depository libraries are no longer just providing storage space, shelves, and some staff to access information resources. Rather, these libraries possess much more sophisticated technologies which require different cost comparisons and capabilities.

Fourth, the local needs of each depository library and the type of information the general public may require have to be considered.

Finally, it is important to remember the political context in which these decisions will be made, not only in relation to individual depository libraries, but in relation to the people who arrange for the depository status of the individual libraries.

There are a number of scenarios one could envision for various technological configurations to provide access to information through the depository library system. The first involves doing nothing and continuing the existing pattern of providing materials in print and microfilm. This of course is not a very likely prospect.

Second, might be the establishment of alternative forms of onsite deposit. A large onsite data base might be accessed through computer equipment at the library site with associated high-speed printing or COM production devices nearby.

A third approach could involve accessing data at remote sites. In this case the data are held on magnetic tapes, video disks and accessed at the point where it is being used. The primary concern with this option is the associated telecommunications charges. Besides the telecommunications cost (which could be worked around) a library would also have the cost of purchasing equipment to actually access the data. Although figures of up to $50,000 per station have been discussed, a library might buy a local work station for accessing and receiving information for about $5,000. This would probably include a microcomputer with a modern and a fairly low-quality local printer. Thus the total cost for one work station for each depository library would be around $7 million. But because some libraries would require more than one station, the total ballpark figure could reach about $10 million. Again this would depend on the quality of the equipment.

In addition, a central site would have to be built to support all these information exchange activities. A central site consisting of various kinds of telecommunications hardware would cost about the same as the various nationwide onsite stations. The final question in a situation such as this is who is going to pay for the implementation of such a system? Beside the actual hardware and software costs, there are maintenance, training, and telecommunications charges. Again there are several options.

The agency providing support to the library could simply say they are providing information in electronic form and will give the guidance on how to access it. But, essentially the library is on its own. In that situation each library might then approach its local community and encourage individuals from the public and private sectors to help finance the equipment cost.

Another approach would be the sharing of costs. Perhaps the Federal agency could provide the equipment, while each of the libraries would be responsible for the training of personnel and the maintenance of the equipment. Further, the Government might also be able to make special arrangements to offset the telecommunications charges.

Question 7. What is the outlook for including high-resolution graphics with text in a single data base?

Speaker: *Peter Preksto*, vice president of INTRAN Corp.

The question appeared to be a little vague. Nevertheless, it is important to keep in mind that the disk does not particularly care whether it is graphics or text; they coexist in one data base. The problems are identifying the file types, its creation, retrieval, and then putting the information on a single page for printout. The focus of this talk will be on the current stumbling block, graphics. As was mentioned earlier, text transmission does not appear to be a serious problem.

There are two basic kinds of graphics, structured and unstructured. Structured graphics are exemplified by computer-aided design (CAD) and computer-aided manufacturing (CAM). The file containing the picture could possibly be read in an ASCII file. It simply involves drawing a line from this point to that point, drawing a polygon and filling it with shading, and so forth. In fact, "structured graphics are easy to move around, as easy as text in most cases—you can just ship it back and forth." It is also very economical in size, too, and it can be scaled and used on a number of different devices.

The difficult graphics are the unstructured graphics, such as line drawings that have been scanned on a digitizer. Digitizing means that each pixel, or picture element, on the page is looked at by the device to see whether or not there is anything there. This is stored, usually eight pixels to the byte, and requires a disk for transmission. An 8½ inches by 11 inches page, which is scanned at 300 bits resolution, takes about a megabyte of storage. Consequently, a document that has a lot of pictures requires a large amount of storage space and takes a long time to transmit.

Both structured and unstructured graphics, like text, are stored with header information. For structured graphics, header information contains drawing number and project number. Unstructured graphics has similar information, but it also has data about how wide the drawing is in pixels.

The text and graphics are stored together on the same disk, and require a way to pull them off when putting together a document. Usually, there is a very simple kind of data base retrieval system, or data base management system, that can go into these huge disk files. If there are a lot of pictures the retrieval system can quickly find the correct picture and merge it with the right document.

The real critical issue in composition right now is how to store the make-up for the composed page so that it can go to a wide variety of very different devices. Those devices might include a low resolution ASCII terminal, a high resolution terminal (100 dot-per-inch), various laser printers, or the 1,400 dot-per-inch phototypesetter.

Further, "we have to be able to take the same file and be able to send it to any one of these devices, have it interpreted, either by the device or by a program just in front of the device, and then the device has to print out what it sees. And it all has to be done quickly."

An example of a device that might help with these challenges is the virtual device metafile. This device contains information on where to place text on the page, what pictures are used and where they go. Graphic primitives, like polygons, filled rectangles, and lines of different styles, all are contained within the file.

Finally, when transmitting a lot of documents to many locations, it will be important to adopt some kind of standard. It may be the ANSI standard, the virtual device metafile, or a facsimile protocol that is coming out for merging text and graphics. If different agencies were to purchase equipment that supported one or more of these devices, then the job of disseminating information would be made a lot easier.

Additional Presentation

Speaker: *Brian Aveney*, Blackwell North America, The Dying Edition.

We typically have overestimated what will happen in 5 years, and underestimated the change that 15 years will bring. The electronic metamorphosis of publishing will probably result in only surface changes in short-term, but most likely transform the way we organize and deliver information in the long term. This discussion will focus on the longer term.

Authors and readers have existed since the beginning of writing. Publishers, printers, distributors, bookstores, and libraries are relatively recent inventions, only 500 years old at best. These latter institutions are technology-bound. They are part of an industrial mass-production and distribution process. They are engaged primarily in the transportation of information, not its creation or use. This is not to suggest that they do nothing other than transport information, merely that their other functions are not sufficient to justify the continuation of these institutions as we know them.

Editions are a technological rather than intellectual concept, the result of application of mass-production techniques to literature. Books are typically 250 to 300-pages for technological and economic rather than intellectual reasons; 300 page books have no more intellectual validity than four rolls of toilet paper per package.

By bypassing the industrial basis of current publishing and distribution channels, electronic publishing will eventually change the products and render the technology-bound intermediary institutions obsolete. It won't matter who controls the printing presses when information is transmitted directly to users.

As authors increasingly develop their "manuscripts" on word processing systems and users increasingly have home computers, the needs for intermediaries will diminish. The principal technical barrier to direct transfer between authors' and readers' computers is telecommunications cost. The replacement of point-to-point communications networks with digital switched networks, planned to occur in 10 to 15 years, will lower costs per message. Competition between current, largely hard-wired networks and technologies such as pocket radio and direct satellite access also promises to eventually lower prices.

There is a tendency toward institutional stability that retards the reorganization of society around new technologies. This conservatism helps keep society from lurching about, and helps keep its members relatively sane. In the long term, however, societal institutions change to reflect economic underpinnings which, in a free-market society, follow a sort of technological imperative.

As the technology of information transfer changes to more direct communication between author and reader, technology-bound concepts like edition will disappear. Books are the conveniently sized chunks for printing presses and binding machines. Electronic publishing inherently favors smaller chunks. Electronic publishing will result in increased individualization of information deliveries, in part by combining relevant chunks on demand. "Expert systems" may be the model for the book's replacements.

Direct author-reader transmission will replace our current hierarchical industrial-model institutions with decentralized network institutions. The JCP's control over the presses will become meaningless. New models will stress coordination over control.

How will readers find what they want in a vast sea of independent author/publishers? What bibliographic apparatus need exist? Without publisher's imprimatur, how will readers separate the wheat from the chaff? New post-industrial institutions will be needed. The librarians and booksellers' model will be the consultant, whose power is knowledge, not capital equipment. The JCP must change focus from production and delivery to regulation and coordination. Publishers will de-couple editorial and selection assistance from physical production. Printers and distributors will disappear; they are purely technology-based organizations.

Eventually, new native forms of information presentation will develop from the electronic environment, just as the journal developed in an edition printing environment. These forms will not be limited to text. We will all be dead by the time that process has reached fruition.

APPENDIX 4

Depository Library Survey Questionnaire

A. Information on type and size of Library

1. Library Name..

2. Address..
(City) (State) (Zip)

3. Depository Library Number..

4. Title of individual completing questionnaire:

....

5. Contact Person..
(Name) (Telephone No.)

6. Is your library a selective or a regional depository library? (Check one)
   a. 1240 Selective depository library
   b. 51 Regional depository library

7. Which of the categories below best describes your library? (Check one)
   a. 721 Academic library
   b. 55 Court library
   c. 40 Federal agency library
   d. 135 Law school library
   e. 267 Public library
   f. 45 State library agency
   g. 28 Other (please specify)

8. Approximately how many volumes (both paper and microfiche) does your entire library include? (Check one)
   a. 76 Less than 50,000
   b. 122 50,000 to 99,999
   c. 298 100,000 to 199,999
   d. 375 200,000 to 499,999
   e. 188 500,000 to 999,999
   f. 184 1,000,000 to 3,999,999
   g. 48 4,000,000 or more

B. Telecommunications (Check all which apply)

Which of the following telecommunications systems does your library use?

647 dial direct; 167 in Watts: 272 out WATTS; 691 Telenet; 54 FTS; 19 foreign exchange line; 676 Tymnet; 367 Uninet; and 170 other.

C. Cooperative Technical Processing Services (Check all which apply)

Does your library utilize any of the following Cooperative Technical Processing Services?

AFLI 9;
AMIGOS 98;
BCR 51;
CAPCON 11;
CCLC 5;
DOBIS 0;
FAUL 0;
FEDLINK 40;
ILLINET 39;
INCOLSA 27;
INDPNDNT 5;
MINITEX 35;
MLC 39;
MLNC 22;
NEBASE 12;
NELINET 62;
OHIONET 48;
PALINET 60;
RLIN 111;
PRLC 29;
SOLINET 159;
SUNY 37;
UTLAS 1;
WESTERN 21;
WILS 21;
WLN 43;
OTHER 46.

D. Networking (Check all which apply)

1. Does your library currently use or anticipate the purchase of an in-house computer for the library system?
   No 429. Yes 472. Plan to acquire 337 (name or describe)

2. Does your library use or plan to create an intra-organizational computer network within the parent institution, e.g. university, county government, etc. system?
   No 694. Yes 358. Plan to acquire 180 (name or describe):

3. Has your organization (university, government, etc.) developed or planned an inter-organizational computer netword of like institutions?
   No 838. Yes 253. Plan to acquire 123 (name or describe):

E. Charges to Patrons (Check all which apply)

1. Does the library currently charge patrons for computer searches? Yes 587. No 472.
2. Are charges made for:
   Data base Cost? Yes 550. No 486.
   Data base cost plus telecommunications? Yes 469. No 518.
   Data base cost plus labor? Yes 95. No 760.
   Data base cost plus telecommunications and labor? Yes 80. No 755.
3. Does your library charge (or have special arrangements) for faculty/employees/students? Yes 50. No 516.
4. Does your library currently charge patrons for computer searches of already existing government generated data bases? Yes 465. No 495.
5. Does your library currently charge patrons for duplicating government documents from paper, microfilm, or computer printout? Yes 1066. No 140.
6. Do you have a patron operated copier? Yes 1216. No 29.

F. Research Publications

1. Does your library search or desire to search any of the following selected government publications? If so, do you use them in paper, microfiche or electronic format. If in electronic format, do you search in Government, commercial or in-house computer? (See description of publications in appendix.) If you are not presently searching in electronic format do you see a demand for the data in an electronic format?

Name	Search in paper or MC	Search in electronic format now			Search in electronic format in future	
		Government direct	In-house	Commercial vendor	Current need	Future need
Agricola (USDA)	122	2	12	468	16	31
Aptic (Air Pollution Tech Info Ctr)	52	0	4	233	25	44
Aquaculture (NOAA)	46	0	5	286	15	46
Aquatic Science & Fisheries Abstracts (NOAA)	84	0	4	294	18	40
Attorney General Opinions (Justice)	316	4	3	51	78	105
BLS Consumer Price Index	704	1	7	321	109	131
BLS Employment Hours & Earnings	631	1	5	297	87	108
BLS Labor Force	399	1	6	287	77	101
BLS Labor Statistics (Labstat)	441	3	9	186	104	132
CASSIS (Patent & Trademark Office)	118	29	4	82	78	98
Chemical Regulations & Guidelines System (CRGS)	44	0	2	186	46	65
Child Abuse & Neglect (Health & Human Services)	313	0	11	384	86	101
Coalex	16	0	1	7	36	42
Code of Federal Regulations (CFR)	1110	4	9	259	201	169
Cold Regions Science and Technology (Corps Engineers)	42	1	1	73	19	24
Commerce Business Daily	605	0	4	254	90	96
Comptroller General Decisions	341	7	4	76	56	67
CRIS/ISDA (USDA)	38	0	6	278	10	23
Defense Acquisition Regulation (DAR's)	93	2	1	9	47	51
Energy Data Base	180	20	5	259	69	70
ERIC	759	0	31	633	58	73
Federal Acquisition Regulations (FAR's)	77	2	2	22	34	42
Federal Register	1080	1	4	386	152	144
Fisheries Abstracts (NOAA)	124	0	2	73	42	49
Foreign Traders Index (Commerce)	39	0	6	198	27	49
GPO Monthly Catalog	1147	3	15	543	137	117
GPO Sales Reference File	987	5	4	314	153	97
Health Planning and Administration (National Library of Medicine)	125	29	8	359	41	38
IRIS Water Quality (EPA)	49	2	1	220	36	41
LC Marc (or other Marc records)	291	8	56	562	49	47
Medline (National Library of Medicine)	278	69	16	525	41	56
National Criminal Justice Reference Service	366	3	7	361	96	71
NTIS (GRA&I)	543	3	15	499	63	61
Nuclear Regulatory Commission Decisions	320	2	3	20	90	87
Office of the Legal Counsel Memorandum (Justice)	124	3	2	8	66	67
SSIE (NTIS)	61	0	11	332	31	40
TRIS (Transportation Research) (DOT)	60	0	8	283	16	41
Trade Opportunities (Commerce)	117	0	5	206	38	63
TSCA Initial Inventory (EPA)	88	6	3	216	28	43
United States Presidential Executive Orders	740	4	6	91	175	119
United States Code	1078	5	8	169	205	153
United States Exports (Commerce)	242	0	8	149	52	68
United States Public Laws	981	7	5	73	239	162
Water Resources Abstracts	322	7	4	317	45	56
Others:						
Congressional Record	23	0	0	4	12	3
Census	16	0	3	2	9	5
Patents	10	6	0	10	1	0
NASA Recon	9	10	1	0	2	0
U.S. Reports	10	0	0	6	3	1
Fish & Wildlife Survey	3	0	0	3	2	0
IRS	7	0	0	4	3	0
OSHA	6	0	0	6	0	0

2. Is there a center at your organization or institution which acquires federal government produced data in machine readable form (typically on tape) and makes it available to patrons?

Yes 203. No 958. Do not know 130.

Tapes acquired by: Library 34; Computer Center 76; Other (explain) 89.

Tapes acquired from (please check): Federal Agency 127; Commercial Source 21; Academic or Non-Profit Data Archive e.g., ICPSR 65; Other (explain) 30.

G. COMPUTER EQUIPMENT AND FORMATS

Make	Model	Operating system	Memory capacity	Location		
				Parent institution	Library other*	Government documents department
....	....	....	....	....	....	....
....	....	....	....	....	....	....

*Area other than Government Documents Department.

2. Minicomputer:

Make	Model	Operating system	Memory capacity	Location		
				Parent institution	Library other*	Government documents department
....	....	....	....	....	....	....
....	....	....	....	....	....	....

*Area other than Government Documents Department.

3. Microcomputer:

Make	Model	Operating system	Memory capacity	Location		
				Parent institution	Library other*	Government documents department
....	....	....	....	....	....	....
....	....	....	....	....	....	....

*Area other than Government Documents Department.

4. Format:

Would you prefer government documents delivered in a format other than paper and microfiche? Yes 295. No 665. (Please check.)

On-line 227; Magnetic Tape 56; Floppy Disk 123; Optical Disk 55; Hard Disk 33; Video Disk 47; other 2.

5. Terminal(s)

1. Does your library have a terminal(s) to access IN-HOUSE (institutional) or OUT-OF-HOUSE (non-institutional) data bases for research, cataloging, etc? Yes 1041. No 202.
2. If yes, please check or fill in information as required.

TERMINALS

Terminal identification			Which computers accessed?			
Make	Model	Quantity	In-house			Out-of-house
			Main	Mini	Micro	
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						

WHERE IS TERMINAL LOCATED

Make	Parent institution	Library and other	Government document department
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

WHO USES

Make	Administration	Reference	Government document department	Technical process
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

RESEARCH PUBLICATIONS

ANNOTATIONS

AGRICOLA (National Agriculture Library)
Data base derived from NAL cataloging and indexing records; provides worldwide coverage of monograph and journal literature.

APTIC (Air Pollution Technical Information Center, Environmental Protection Agency)
Data base includes materials on all aspects of air pollution from 1966–September 1978.

AQUACULTURE (National Oceanic and Atmospheric Administration)
Data base coverage from print and nonprint media with regard to the growing of fresh water, brackish or marine plants and animals.

AQUATIC SCIENCES AND FISHERIES ABSTRACTS (National Oceanic and Atmospheric Administration and Cambridge Scientific Abstracts)
Life sciences data base of seas and inland waters including legal, political and social topics.

ATTORNEY GENERAL OPINIONS (Department of Justice)
A data base of Official Opinions of the Attorney General of the U.S. advising the President and heads of departments in relation to their official duties.

BLS CONSUMER PRICE INDEX (Bureau of Labor Statistics)
Data base contains changes in prices for goods and services bought by all urban consumers as well as urban wage earners and clerical workers.

BLS EMPLOYMENT, HOURS, AND EARNINGS (Bureau of Labor Statistics)
Data base contains time series on employment, hours of work, and earnings information for the United States organized by industry.

BLS LABOR FORCE (Bureau of Labor Statistics)
Data base contains time series on U.S. employment, unemployment, and nonparticipation in the labor force.

CASSIS (Classification and Search Support Information System, Patent and Trademark Office)
A system which provides Patent Depository libraries with direct, on-line access to Patent and Trademark Office data.

CHEMICAL REGULATIONS AND GUIDELINES SYSTEM (U.S. Interagency Regulatory Liaison Group, CRC Systems)
Index of U.S. Federal regulatory material about control of chemical substances.

CHILD ABUSE AND NEGLECT DATA BASE (Health and Human Services)
Comprehensive information on child abuse and neglect including coverage of state laws, research projects and a-v materials.

COALEX (Office of Surface Mining)
On-line library of data relating to the regulation of surface mining of coal and related land reclamation.

CODE OF FEDERAL REGULATIONS (Government Printing Office)
A data base of codified general and permanent rules published in the Federal Register by Executive Departments and agencies of the Federal Government.

COLD REGIONS (Army, Corps of Engineers)
Worldwide coverage of literature relating to all aspects of the Arctic and Antarctica.

COMMERCE BUSINESS DAILY (Department of Commerce)
Complete text of Commerce Business Daily which announces products and services wanted or offered by the Federal government.

COMPTROLLER GENERAL DECISIONS (General Accounting Office)
Decisions rendered to heads of departments, disbursing officers, and certifying offices with regard to claims and validity of contract awards.

CRIS/USDA (Current Research Information System, Department of Agriculture)
Contains information on all agricultural research projects sponsored or conducted by USDA research agencies, state agricultural experiment stations, forestry schools and other cooperating institutions.

DEFENSE ACQUISITION REGULATIONS (Department of Defense)
A data base of regulations promulgated by the Department of Defense for the purposes of defense procurement of supplies and services.

EDB (Energy Data Base, Department of Energy)
Comprehensive data base of worldwide coverage of energy related literature.

ERIC (Education Resources Information Center, National Institute of Education)
Broad coverage of education materials.

Federal Register (Government Printing Office)
A data base which incorporates the first publication of rules, and notifications of each Federal executive department and agency.

Fisheries Information System (National Oceanic and Atmospheric Administration)
National system providing information on commercial and recreation fisheries.

Foreign Traders Index (Department of Commerce)
Directory of lists of potential direct-use purchasers and other importers of United States goods.

GPO Monthly Catalog (Government Printing Office)
Monthly catalog of publications of Federal government agencies, including the U.S. Congress.

GPO Sales Publications Reference File (Government Printing Office)
Catalog of Federal documents currently for sale by the Superintendent of Documents, GPO.

Health Planning and Administration (National Library of Medicine)
References nonclinical literature on all aspects of health care sources and related topics, drawn from MEDLINE and American Hospital Association Hospital Literature Index.

IRIS (Instructional Resources Information System, Environmental Protection Agency)
Data base of educational and instructional materials on water quality and water resources.

LC MARC or other MARC records
Bibliographic access to records of materials cataloged by the Library of Congress.

MEDLINE (MEDLARS on-line, National Library of Medicine)
Comprehensive coverage of medical literature.

NCJRS (National Criminal Justice Reference Service, Department of Justice)
Data base coverage of all aspects of law enforcement.

NTIS (GRA&I) (National Technical Information Service, Department of Commerce)
Government Reports Announcements and Index. Multidisciplinary data base of citations to Federal Government sponsored research, development and engineering reports.

Nuclear Regulatory Commission Decisions
Data base of adjudicatory decisions and other issuances of organizations responsible for regulation of nuclear reactor safety.

Office of Legal Counsel Memorandums (Department of Justice)
A data base of selected memorandum opinions advising the President, Attorney General, and other executive officers of the Federal Government in relation to their official duties.

SSIE (Smithsonian Science Information Exchange, NTIS)
Data base of government and privately funded scientific research projects currently in progress or recently initiated.

TRIS (Transportation Research Information Service, Department of Transportation)
Index of transportation research information on air, highway, rail and marine transport.

Trade Opportunities (Department of Commerce)
Data base of useful sales information to U.S. companies interested in exporting. Information collected from U.S. Foreign Service posts abroad.

TSCS Initial Inventory (Toxic Substances Control Act, Environmental Protection Agency)
Listing of chemical substances (toxicity not criterion) in commercial use in the United States.

United States Code
A data base consisting of all codified laws of the U.S. Government currently in force.

United States Export (Department of Commerce)
Export statistics for all domestic and foreign merchandise from the United States and Territories to other countries.

United States Presidential Executive Orders
A data base of mandates issued by the United States President generally pursuant to authority delegated to him by legislative enactment.

United States Public Laws
A data base of first publication of U.S. congressional legislation.

Water Resources Abstracts (Department of the Interior)
File covers wide range of water resource topics including water planning, water cycle, and water quality.

APPENDIX 5

SUMMARY OF RESPONSES TO DEPOSITORY LIBRARY SURVEY

The summary results of the survey are presented below. The questionnaire is provided in appendix 1, and detailed tables in appendix 3.

Type and Size of Depository Libraries

Library types were broken down into seven categories. The categories and their respective responses were:

Type of library	Number	Percent
Academic	721	55.8
Public	267	20.7
Law school	135	10.5
Court	55	4.3
State agency	45	3.5
Federal agency	40	3.1
Other	28	2.2
Total	1,291	100.0

Over 75 percent of all depository libraries are either academic or public libraries. Additionally, of the 51 regional libraries, 58.8 percent are academic, 31.4 percent are State agencies, and the remaining 9.8 percent are public.

The size of libraries responding ranged from less than 50,000 volumes to more than 4 million volumes. The number of libraries broken-down by size of collection is:

Number of volumes	Number	Percent
Less than 50,000	76	5.9
50,000 to 99,999	122	9.5
100,000 to 199,999	298	23.1
200,000 to 499,999	375	29.0
500,000 to 999,999	188	14.6
1,000,000 to 4,000,000	184	14.3
More than 4,000,000	48	3.7
Total	1,291	100.0

Of the 51 regional libraries, over 90 percent have at least 500,000 volumes.

Detailed cross-referencing of type and size may be found in appendix 3.

Telecommunications Systems Used

Nine choices of telecommunications systems were identified. The libraries responded to all that were in use at their library. The results were as follows:

System	Number	Percent
Telenet	691	53.5
Tymnet	676	52.4
Direct dial	647	50.1
Uninet	367	28.4
Out Watts	272	21.1
In Watts	167	12.9
FTS	54	4.2
Foreign exchange line	19	1.5
Other	170	13.2
No response	180	13.9

A choice of "none" was not given, so it is assumed that the 180 libraries (13.9 percent) which did not respond to this question do not have telecommunications capabilities. It is clear that many libraries use more than one telecommunication system. Further analysis of the responses revealed that 22.8 percent use only one, 15.9 percent use two, 20.8 percent use three, 16 percent use four, and 10.5 percent use more than four telecommunications systems.

The Committee believes it is significant that 86.1 percent use at least one telecommunications system. Of the two most widely used systems, Telenet and Tymnet, 46.6 percent use both systems and 59.3 use one or the other.

Considering only the regional libraries, 98 percent use at least one telecommunications system. 84.3 percent use both Telenet and Tymnet and 92.2 percent use one or the other.

Cooperative Technical Processing Services Used

A choice of 26 services were listed in the questionnaire. The libraries responded to all that were in use at their library. The results were as follows:

Service	Number	Percent	Service	Number	Percent
AFLI*	9	0.7	AMIGOS*	98	7.6
BCR*	51	4.0	CAPCON*	11	0.9
CCLC	5	0.4	DOBIS	0	0.0
FAUL	0	0.0	FEDLINK*	40	3.1
ILLINET*	39	3.0	INCOLSA*	27	2.1
INDPNDNT	5	0.4	MINITEX*	35	2.7
MLC*	39	3.0	MLNC*	22	1.7
NEBASE*	12	0.9	NELINET*	62	4.8
OHIONET*	48	3.7	PALINET*	60	4.6
RLIN	111	8.6	PRLC*	29	2.2
SOLINET	159	12.3	SUNY*	37	2.9
UTLAS	1	0.1	WESTERN*	21	1.6
WILS*	21	1.6	WLN	43	3.3
Other	46	3.6	No Response	344	26.6

[Those with an asterisk have contracts with the Online Computer Library Center, Inc., (OCLC), or are part of OCLC. Thus 813, or 59 percent of the responding libraries are participants in one bibliographic utility (OCLC).]

Again a choice of "none" was not given; therefore, it is assumed that the libraries that did not respond to this question do not subscribe to any cooperative technical processing service.

It is important to note that 73.4 percent of the libraries participate in at least one cooperative technical processing service. Only 5.5 percent participate in more than one service.

Of the regional depository libraries, 94.1 percent participate in at least one cooperative technical processing service.

Networking

The libraries were asked if they (1) had or planned to acquire an in-house computer for the library system, (2) used or planned to create an intra-organizational computer network within the parent institution, and (3) had developed or planned an inter-organizational computer network of like institutions. Of the libraries responding, 37 percent had an in-house computer and 26 percent were planning to acquire a computer. Intra-organizational networks are in use at 28 percent of the libraries and 14 percent have plans to acquire one. Inter-organizational networks are in use at 20 percent and 10 percent plan to acquire.

Charges to Patrons

Several questions were asked concerning charges to patrons by the libraries. Concerning general charges for computer searches: 45.5 percent made some type of charge for computer searches, 43 percent passed on at least the data base costs, 36 percent charge for both data base and telecommunications, only 6 percent charge for data base, telecommunications, and labor. Of the responding libraries 39.3 percent charge (or have special arrangements) for faculty/employees/students. Charges for computer searches of already existing Government generated data bases are made by 36 percent of the libraries. Of the respondees 82.6 percent charge for duplicating Government documents from paper, microform, or computer printouts and 94.2 percent have a patron operated copier.

Research Publications

The libraries were asked about specific titles of Government publications, related bibliographic retrieval tools, and the respective formats of each now being used. The format options were paper copy, microform, or electronic data bases. They were also asked about future information requirements and about the most useful format for the future information. The three previously stated formats were agains available for selection. Specific titles were listed for 44 Government publications. Respondees were asked to list others. Answers were grouped into two formats: (1) "Paper/microform; (2) Electronic data bases."

Publication	Rank	Number
PAPER OR MICROFORM NOW		
GPO Monthly Catalog	1	1,147
Code of Federal Regulations	2	1,110
Federal Register	3	1,080
United States Code	4	1,078
GPO sales reference file	5	987
U.S. Public Laws	6	981
Education Resources Information Center (ERIC)	7	759
U.S. Presidential Executive Orders	8	740
BLS Consumer Price Index	9	704
BLS Employment Statistics	10	631
ELECTRONIC FORMAT NOW—ALL		
Education Resources Information Center (ERIC)	1	657
LC MARC	2	603
MEDLINE	3	565
GPO Monthly Catalog	4	556
NTIS (GRA and I)	5	511
AGRICOLA (USDA)	6	480
Child Abuse and Neglect	7	394
Federal Register	8	390
Health Planning and Administration	9	380
National Criminal Justice Reference Service (NCJRS)	10	368

	Current need		Future need	
	Rank	Number	Rank	Number
ELECTRONIC FORMAT CURRENT/FUTURE NEED				
United States Public Laws	1	230	2	162
United States Code	2	205	3	153
Code of Federal Regulations	3	201	1	169
U.S. Presidential Executive Orders	4	175	7	119
GPO Sales Reference File	5	153		
Federal Register	6	152	4	144
GPO Monthly Catalog	7	137	8	117
BLS Consumer Price Index	8	109	6	131
BLS Labor Statistics	9	104	5	132
National Criminal Justice Reference Service (NCJRS)	10	96		
BLS Employment Statistics			9	108
Attorney General Opinions			10	105

Responses from the librarians appear in more detail in appendix 6.

The analysis of the responses to this part of the questionnaire lead to several observations.

—Commercial vendors are the primary source of Government data in electronic format now being used by librarians. (66.8%)

—Very few libraries access Government publications through inhouse resources. (11%)

—Very few libraries obtain Government publications/data in electronic format directly from the Government. (9.7%)

—Librarians indicated that there are considerable current (35.4%) and future (40%) needs for Government publications in electronic format.

Additionally, libraries were asked if there is a center at their organizations or institutions which acquires Federal Government produced data in machine readable form (typically on tape) and makes it available to patrons. Of the 203 or 15.7 percent of the libraries responding "yes", 62.6 percent obtained the data directly from a Federal Agency, 10.3 percent from a commercial source, 32 percent from an academic or nonprofit data archive, 14.8 percent from other sources.

Computer Equipment and Formats

Libraries were asked to identify their mainframe computers, minicomputers, and microcomputers and where they were located. Of the 417 libraries which identified mainframes, 90.6 percent were located in the parent institution, 9.4 percent were located in an area of the library other than the Government Documents Department, and less than one of one percent in Government Documents Department.[31]

There were 322 libraries which identified minicomputers, 57.8 percent located in the parent institution, 33.8 percent in other than Government Documents Department, and less than 1/10 percent located in the Documents Department. A total of 530 libraries identified microsomputers—28.7 percent in the parent institution, 74 percent in other than Government Documents Department, and 4 percent in Government Documents Department.

The libraries were also asked if they would prefer documents delivered in a format other than paper or microfiche. A total of 295 libraries (22.9%) expressed an interest in a different format. This percentage appeared low in comparison with the current level of automation in the libraries. An informal survey of a few respondents indicated that the interpretation of the question suggested all Government information would be delivered in a different format as opposed to selected documents. Of those expressing a desire for a different format, the preference was 76.9 percent for online, 41.7 percent for floppy disc, 11.2 percent for hard disc, 19 percent for magnetic tape, 18.6 percent for optical disc, and 15.9 percent for video disc.

Terminals

The librarians were asked if their library had a terminal(s) to access data bases for research, cataloging, et cetera. Of the 1,291 libraries responding, 1,041 (81%) indicated they had at least one terminal. Of this total, 62.2 percent use a terminal for cataloging, 31.3 percent use a terminal for management of in-house administrative functions, and 65.8 percent use terminals for reference services. It is significant to note that only 9.2 percent of the libraries had terminals located in the Government Documents Department; however, 41.6 percent indicated that terminals were used by the Government Documents Department.

The total number of terminals reported by the libraries was 9,492. A breakdown of the number of terminals by size and type of library is included in appendix 6.

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[31] Percentages total more than 100 because some institutions identified computers in more than one area of their institution.

APPENDIX 6
Statistical Tables
Joint Committee on Printing
Ad Hoc Committee Questionnaire
to
Depository Libraries

JOINT COMMITTEE ON PRINTING — QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART A — QUESTIONS 6 AND 7

TYPES OF LIBRARIES SURVEYED TABULATED BY WHETHER LIBRARY IS A SELECTIVE OR REGIONAL DEPOSITORY AND WHETHER LIBRARY IS LOCATED AT A LAND GRANT OR NON-LAND GRANT INSTITUTION

TYPE OF LIBRARY	ALL LIBRARIES		TYPE OF DEPOSITORY				TYPE OF INSTITUTION			
			REGIONAL		SELECTIVE		LAND GRANT		NON-LAND GRANT	
	N	%	N	%	N	%	N	%	N	%
ACADEMIC . .	721	55.8	30	58.8	691	55.7	57	100.0	664	53.8
COURT. . . .	55	4.3	0	0	55	4.4	0	0	55	4.5
FED. AGENCY.	40	3.1	0	0	40	3.2	0	0	40	3.2
LAW SCHOOL .	135	10.5	0	0	135	10.9	0	0	135	10.9
PUBLIC . . .	267	20.7	5	9.8	262	21.1	0	0	267	21.6
STATE AGENCY	45	3.5	16	31.4	29	2.3	0	0	45	3.6
OTHER. . . .	28	2.2	0	0	28	2.3	0	0	28	2.3
TOTALS . . .	1291	100.0	51	100.0	1240	100.0	57	100.0	1234	100.0

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART A -- QUESTIONS 6, 7, AND 8

TYPES OF LIBRARIES SURVEYED TABULATED BY WHETHER LIBRARY IS A SELECTIVE OR REGIONAL DEPOSITORY AND WHETHER LIBRARY IS LOCATED AT A LAND GRANT OR NON-LAND GRANT INSTITUTION TABULATED BY THE NUMBER OF VOLUMES IN THESE LIBRARIES

	NUMBER OF VOLUMES														ALL LIBRARIES	
	LESS THAN 50,000		50,000-99,999		100,000-199,999		200,000-499,999		500,000-999,999		1 TO 4 MILLION		4 MILL. OR MORE			
TYPE OF LIBRARY	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ACADEMIC	31	4.3	60	8.3	142	19.7	211	29.3	126	17.5	125	17.3	26	3.6	721	100.00
COURT.	16	29.1	22	40.0	13	23.6	4	7.3	0	0	0	0	0	0	55	100.00
FEDERAL AGENCY	14	35.0	5	12.5	9	22.5	4	10.0	3	7.5	4	10.0	1	2.5	40	100.00
LAW SCHOOL	2	1.5	7	5.2	59	43.7	57	42.2	9	6.7	1	0.7	0	0	135	100.00
PUBLIC	8	3.0	17	6.4	65	24.3	76	28.5	40	15.0	41	15.4	20	7.5	267	100.00
STATE AGENCY	2	4.4	4	8.9	5	11.1	15	33.3	6	13.3	12	26.7	1	2 2	45	100.00
OTHER.	3	10.7	7	25.0	5	17.9	8	28.6	4	14.3	1	3.6	0	0	28	100.00
TYPE OF DEPOSITORY																
REGIONAL	0	0	1	2.0	0	0	4	7.8	9	17.6	30	58.8	7	13.7	51	100.00
SELECTIVE.	76	6.1	121	9.8	298	24.0	371	29.9	179	14.4	154	12.4	41	3.3	1240	100.00
TYPE OF INSTITUTION																
LAND GRANT	0	0	1	1.8	2	3.5	9	15.8	7	12.3	27	47.4	11	19.3	57	100.00
NON-LAND GRANT	76	6.2	121	9.8	296	24.0	366	29.7	181	14.7	157	12.7	37	3.0	1234	100.00
TOTALS	76	5.9	122	9.5	298	23.1	375	29.0	188	14.6	184	14.3	48	3.7	1291	100.00

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART B

TELECOMMUNICATIONS SYSTEMS USED BY LIBRARIES

SYSTEM	TOTAL FOR SYSTEM	PERCENT OF SYSTEM	PERCENT OF LIBRARIES
DIAL DIRECT	647	21.12	50.12
TELENET	691	22.56	53.52
TYMNET.	676	22.07	52.36
IN WATTS.	167	5.45	12.94
FTS	54	1.76	4.18
UNINET.	367	11.98	28.43
OUT WATTS	272	8.88	21.07
FOREIGN EXCHANGE LINE	19	0.62	1.47
OTHER	170	5.55	13.17
ALL SYSTEMS	3063	100.00	237.26
NO RESPONSE	180		13.94

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART B WITH PART A -- QUESTIONS 6 AND 7

THE NUMBER OF TELECOMMUNICATIONS SYSTEMS UTILIZED

TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

	NUMBER OF TELECOMMUNICATIONS SYSTEMS USED												ALL LIBRARIES RESPONDING		TELENET AND TYMNET		TELENET OR TYMNET		TELENET/ TYMNET/ UNINET	
	NO RESP.		ONE		TWO		THREE		FOUR		OVER 4									
TYPE OF LIBRARY	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ACADEMIC	84	11.7	126	17.5	108	15.0	171	23.7	139	19.3	93	12.9	721	100.0	397	55.1	491	68.1	497	68.9
COURT	10	18.2	23	41.8	9	16.4	9	16.4	2	3.6	2	3.6	55	100.0	12	21.8	16	29.1	16	29.1
FEDERAL AGENCY	2	5.0	3	7.5	12	30.0	8	20.0	9	22.5	6	15.0	40	100.0	19	47.5	29	72.5	29	72.5
LAW SCHOOL	14	10.4	33	24.4	32	23.7	31	23.0	17	12.6	8	5.9	135	100.0	59	43.7	76	56.3	76	56.3
PUBLIC	55	20.6	99	37.1	34	12.7	41	15.4	27	10.1	11	4.1	267	100.0	77	28.8	110	41.2	115	43.1
STATE AGENCY	5	11.1	5	11.1	7	15.6	4	8.9	11	24.4	13	28.9	45	100.0	28	62.2	32	71.1	33	73.3
OTHER	10	35.7	5	17.9	3	10.7	5	17.9	2	7.1	3	10.7	28	100.0	10	35.7	11	39.3	11	39.3
TYPE OF DEPOSITORY																				
REGIONAL	1	2.0	2	3.9	5	9.8	15	29.4	14	27.5	14	27.5	51	100.0	43	84.3	47	92.2	47	92.2
SELECTIVE	179	14.4	292	23.5	200	16.1	254	20.5	193	15.6	122	9.8	1240	100.0	559	45.1	718	57.9	730	58.9
TYPE OF INSTITUTION																				
LAND GRANT	5	8.8	5	8.8	1	1.8	18	31.6	18	31.6	10	17.5	57	100.0	41	71.9	49	86.0	50	87.7
NON-LAND GRANT	175	14.2	289	23.4	204	16.5	251	20.3	189	15.3	126	10.2	1234	100.0	561	45.5	716	58.0	727	58.9
TOTALS	180	13.9	294	22.8	205	15.9	269	20.8	207	16.0	136	10.5	1291	100.0	602	46.6	765	59.3	777	60.2

JOINT COMMITTEE ON PRINTING -- QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART C WITH PART A -- QUESTIONS 6 AND 7

COOPERATIVE TECHNICAL PROCESSING SERVICES UTILIZED, ALPHABETICAL BY NAME

TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

	TYPE OF LIBRARY														TOTAL FOR SERVICE		REGIONAL DEPOSITORY	
	ACADEMIC		COURT		FED. AGY.		LAW SCHOOL		PUBLIC		STATE AGY		OTHER					
SERVICE	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
AFLI.	6	0.8	0	0.0	0	0.0	0	0.0	3	1.1	0	0.0	0	0.0	9	0.7	1	2.0
AMIGOS.	66	9.2	0	0.0	0	0.0	9	6.7	17	6.4	4	8.9	2	7.1	98	7.6	9	17.6
BCR	32	4.4	2	3.6	0	0.0	5	3.7	7	2.6	4	8.9	1	3.6	51	4.0	3	5.9
CAPCON.	6	0.8	1	1.8	0	0.0	4	3.0	0	0.0	0	0.0	0	0.0	11	0.9	0	0.0
CCLC.	3	0.4	1	1.8	0	0.0	1	0.7	0	0.0	0	0.0	0	0.0	5	0.4	0	0.0
DOBIS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
FAUL.	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
FEDLINK	6	0.8	4	7.3	28	70.0	0	0.0	0	0.0	1	2.2	1	3.6	40	3.1	1	2.0
ILLINET	25	3.5	0	0.0	0	0.0	7	5.2	5	1.9	1	2.2	1	3.6	39	3.0	1	2.0
INCOLSA	20	2.8	0	0.0	0	0.0	3	2.2	4	1.5	0	0.0	0	0.0	27	2.1	0	0.0
INDPNDNT. . . .	1	0.1	0	0.0	0	0.0	3	2.2	1	0.4	0	0.0	0	0.0	5	0.4	0	0.0
MINITEX	21	2.9	1	1.8	0	0.0	3	2.2	6	2.2	2	4.4	2	7.1	35	2.7	2	3.9
MLC	25	3.5	0	0.0	0	0.0	7	5.2	6	2.2	1	2.2	0	0.0	39	3.0	2	3.9
MLNC.	19	2.6	0	0.0	0	0.0	2	1.5	1	0.4	0	0.0	0	0.0	22	1.7	0	0.0
NEBASE.	8	1.1	0	0.0	0	0.0	2	1.5	1	0.4	1	2.2	0	0.0	12	0.9	2	3.9
NELINET	37	5.1	2	3.6	0	0.0	6	4.4	8	3.0	5	11.1	4	14.3	62	4.8	3	5.9
OHIONET	32	4.4	0	0.0	0	0.0	6	4.4	9	3.4	1	2.2	0	0.0	48	3.7	1	2.0
PALINET	39	5.4	1	1.8	0	0.0	4	3.0	14	5.2	2	4.4	0	0.0	60	4.6	3	5.9
RLIN.	43	6.0	0	0.0	3	7.5	28	20.7	29	10.9	3	6.7	5	17.9	111	8.6	5	9.8
PRLC.	16	2.2	1	1.8	0	0.0	2	1.5	9	3.4	1	2.2	0	0.0	29	2.2	1	2.0
SOLINET	115	16.0	2	3.6	0	0.0	18	13.3	16	6.0	8	17.8	0	0.0	159	12.3	10	19.6
SUNY.	27	3.7	0	0.0	0	0.0	5	3.7	4	1.5	1	2.2	0	0.0	37	2.9	1	2.0
UTLAS	0	0.0	0	0.0	0	0.0	0	0.0	1	0.4	0	0.0	0	0.0	1	0.1	0	0.0
WESTERN	16	2.2	0	0.0	0	0.0	1	0.7	3	1.1	1	2.2	0	0.0	21	1.6	1	2.0
WILS.	15	2.1	0	0.0	0	0.0	1	0.7	4	1.5	0	0.0	1	3.6	21	1.6	2	3.9
WLN	21	2.9	0	0.0	1	2.5	6	4.4	8	3.0	7	15.6	0	0.0	43	3.3	5	9.8
OTHER	17	2.4	0	0.0	2	5.0	5	3.7	18	6.7	2	4.4	2	7.1	46	3.6	1	2.0
NO RESPONSE . .	150	20.8	40	72.7	11	27.5	23	17.0	102	38.2	6	13.3	12	42.9	344	26.6	3	5.9
ALL SERVICES. .	615	85.3	15	27.3	34	85.0	128	94.8	174	65.2	45	100.0	19	67.9	1030	79.8	53	103.9
ALL LIBRARIES .	721	100.0	55	100.0	40	100.0	135	100.0	267	100.0	45	100.0	28	100.0	1291	100.0	51	100.0

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART C WITH PART A -- QUESTIONS 6 AND 7

THE NUMBER OF COOPERATIVE TECHNICAL PROCESSING SERVICES UTILIZED

TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

	COOPERATIVE TECHNICAL PROCESSING SERVICES UTILIZED										ALL LIBRARIES RESPONDING	
	NONE		ONE		TWO		THREE		OVER THREE			
TYPE OF LIBRARY	N	%	N	%	N	%	N	%	N	%	N	%
ACADEMIC	150	20.8	535	74.2	29	4.0	6	0.8	1	0.1	721	100.0
COURT	40	72.7	15	27.3	0	0.0	0	0.0	0	0.0	55	100.0
FEDERAL AGENCY	11	27.5	24	60.0	5	12.5	0	0.0	0	0.0	40	100.0
LAW SCHOOL	23	17.0	100	74.1	8	5.9	4	3.0	0	0.0	135	100.0
PUBLIC	102	38.2	156	58.4	9	3.4	0	0.0	0	0.0	267	100.0
STATE AGENCY	6	13.3	34	75.6	4	8.9	1	2.2	0	0.0	45	100.0
OTHER	12	42.9	13	46.4	3	10.7	0	0.0	0	0.0	28	100.0
TYPE OF DEPOSITORY												
REGIONAL	3	5.9	45	88.2	2	3.9	0	0.0	1	2.0	51	100.0
SELECTIVE	341	27.5	832	67.1	56	4.5	11	0.9	0	0.0	1240	100.0
TYPE OF INSTITUTION												
LAND GRANT	8	14.0	40	70.2	6	10.5	2	3.5	1	1.8	57	100.0
NON-LAND GRANT	336	27.2	837	67.8	52	4.2	9	0.7	0	0.0	1234	100.0
TOTALS	344	26.6	877	67.9	58	4.5	11	0.9	1	0.1	1291	100.0

JOINT COMMITTEE ON PRINTING -- QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART D -- QUESTIONS 1, 2, AND 3 WITH PART A -- QUESTIONS 6 AND 7

CURRENT AND OR PLANNED TYPES OF COMPUTER NETWORKING FACILITIES TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

	ALL LIBRARIES		IN-HOUSE COMPUTER								INTRA-ORGANIZATIONAL NETWORK								INTER-ORGANIZATIONAL NETWORK							
			NO		YES		PLAN TO ACQ		NO RESP		NO		YES		PLAN TO ACQ		NO RESP		NO		YES		PLAN TO ACQ		NO RESP	
TYPE OF LIBRARY	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ACADEMIC	721	100	254	35	253	35	186	26	28	4	365	51	216	30	105	15	35	5	449	62	148	21	77	11	47	7
COURT.	55	100	29	53	14	25	9	16	3	5	39	71	11	20	4	7	1	2	45	82	8	15	0	0	2	4
FEDERAL AGENCY	40	100	14	35	15	38	8	20	3	7	32	80	6	15	2	5	0	0	33	82	5	13	1	2	1	2
LAW SCHOOL	135	100	52	39	37	27	40	30	6	4	54	40	42	31	35	26	4	3	98	73	18	13	12	9	7	5
PUBLIC	267	100	59	22	120	45	81	30	7	3	164	61	64	24	25	9	14	5	167	63	60	22	26	10	14	5
STATE AGENCY	45	100	13	29	20	44	8	18	4	9	22	49	12	27	7	16	4	9	24	53	10	22	7	16	4	9
OTHER.	28	100	8	29	13	46	5	18	2	7	18	64	7	25	2	7	1	4	22	79	4	14	0	0	2	7
TYPE OF DEPOSITORY																										
REGIONAL	51	100	8	16	27	53	15	29	1	2	15	29	21	41	12	24	3	6	23	45	18	35	6	12	4	8
SELECTIVE.	1240	100	421	34	445	36	322	26	52	4	679	55	337	27	168	14	56	5	815	66	235	19	117	9	73	6
TYPE OF INSTITUTION																										
LAND GRANT	57	100	14	25	23	40	17	30	3	5	27	47	18	32	10	18	2	4	31	54	17	30	5	9	4	7
NON-LAND GRANT	1234	100	415	34	449	36	320	26	50	4	667	54	340	28	170	14	57	5	807	65	236	19	118	10	73	6
TOTALS	1291	100	429	33	472	37	337	26	53	4	694	54	358	28	180	14	59	5	838	65	253	20	123	10	77	6

JOINT COMMITTEE ON PRINTING -- QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART E.-- QUESTION 1 WITH PART A -- QUESTIONS 6 AND 7

WHETHER LIBRARY CURRENTLY CHARGES PATRONS FOR COMPUTER SEARCHES; TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

	CURRENTLY CHARGE FOR COMPUTER SEARCHES?						ALL LIBRARIES	
	YES		NO		NO RESPONSE			
TYPE OF LIBRARY	N	%	N	%	N	%	N	%
ACADEMIC	463	64.2	154	21.4	104	14.4	721	100.0
COURT.	9	16.4	28	50.9	18	32.7	55	100.0
FEDERAL AGENCY . . .	1	2.5	34	85.0	5	12.5	40	100.0
LAW SCHOOL	31	23.0	97	71.9	7	5.2	135	100.0
PUBLIC	56	21.0	128	47.9	83	31.1	267	100.0
STATE AGENCY	18	40.0	19	42.2	8	17.8	45	100.0
OTHER.	9	32.1	12	42.9	7	25.0	28	100.0
TYPE OF DEPOSITORY:								
REGIONAL	41	80.4	9	17.6	1	2.0	51	100.0
SELECTIVE.	546	44.0	463	37.3	231	18.6	1240	100.0
TYPE OF INSTITUTION:								
LAND GRANT	51	89.5	1	1.8	5	8.8	57	100.0
NON-LAND GRANT . . .	536	43.4	471	38.2	227	18.4	1234	100.0
TOTALS	587	45.5	472	36.6	232	18.0	1291	100.0

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART E -- QUESTION 2 WITH PART A -- QUESTIONS 6 AND 7

TYPES OF CHARGES MADE TO PATRONS FOR COMPUTER SEARCHES TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON—LAND GRANT INSTITUTIONS

	DATABASE COST						DATABASE COST+ TELECOMMUNICATIONS						DATABASE COST+LABOR						DATABASE COST+ TELECOMMUNI- CATIONS+LABOR						ALL LIBRARIES	
	YES		NO		NO RES		YES		NO		NO RES		YES		NO		NO RES		YES		NO		NO RES			
TYPE OF LIBRARY	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ACADEMIC	437	61	165	23	119	17	388	54	185	26	148	21	65	9	390	54	266	37	55	8	386	54	280	39	721	100
COURT.	9	16	29	53	17	31	5	9	31	56	19	35	3	5	32	58	20	36	3	5	32	58	20	36	55	100
FEDERAL AGENCY	1	2	34	85	5	13	1	2	34	85	5	13	0	0	35	88	5	13	0	0	35	88	5	13	40	100
LAW SCHOOL	25	19	98	73	12	9	20	15	99	73	16	12	9	7	107	79	19	14	7	5	106	79	22	16	135	100
PUBLIC	53	20	128	48	86	32	38	14	135	51	94	35	13	5	151	57	103	39	12	4	151	57	104	39	267	100
STATE AGENCY	16	36	20	44	9	20	12	27	22	49	11	24	2	4	30	67	13	29	1	2	30	67	14	31	45	100
OTHER.	9	32	12	43	7	25	5	18	12	43	11	39	3	11	15	54	10	36	2	7	15	54	11	39	28	100
TYPE OF DEPOSITORY:																										
REGIONAL	36	71	10	20	5	10	31	61	13	25	7	14	5	10	29	57	17	33	3	6	30	59	18	35	51	100
SELECTIVE.	514	41	476	38	250	20	438	35	505	41	297	24	90	7	731	59	419	34	77	6	725	58	438	35	1240	100
TYPE OF INSTITUTION:																										
LAND GRANT	47	82	1	2	9	16	45	79	1	2	11	19	5	9	24	42	28	49	4	7	25	44	28	49	57	100
NON-LAND GRANT	503	41	485	39	246	20	424	34	517	42	293	24	90	7	736	60	408	33	76	6	730	59	428	35	1234	100
TOTALS	550	43	486	38	255	20	469	36	518	40	304	24	95	7	760	59	436	34	80	6	755	58	456	35	1291	100

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART E -- QUESTIONS 3 AND 4 WITH PART A -- QUESTIONS 6 AND 7

WHETHER LIBRARY CHARGES FOR FACULTY/EMPLOYEES/STUDENTS AND WHETHER LIBRARY CURRENTLY CHARGES FOR SEARCHES OF GOVERNMENT GENERATED DATA BASES TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

	CHARGE FACULTY, EMPLOYEES, OR STUDENTS?						CHARGE FOR SEARCHES OF GOVERNMENT DATA?						ALL LIBRARIES	
	YES		NO		NO RESPONSE		YES		NO		NO RESPONSE			
TYPE OF LIBRARY	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ACADEMIC	410	56.9	194	26.9	117	16.2	398	55.2	179	24.9	144	20.0	721	100.0
COURT	13	23.6	20	36.4	22	40.0	1	1.8	28	50.9	26	47.3	55	100.0
FEDERAL AGENCY.	5	12.5	28	70.0	7	17.5	1	2.5	32	80.0	7	17.5	40	100.0
LAW SCHOOL.	35	25.9	87	64.4	13	9.6	14	10.4	102	75.6	19	14.1	135	100.0
PUBLIC.	24	9.0	151	56.6	92	34.5	33	12.4	120	44.9	114	42.7	267	100.0
STATE AGENCY.	13	28.9	22	48.9	10	22.2	13	28.9	19	42.2	13	28.9	45	100.0
OTHER	7	25.0	14	50.0	7	25.0	5	17.9	15	53.6	8	28.6	28	100.0
TYPE OF DEPOSITORY														
REGIONAL.	31	60.8	16	31.4	4	7.8	34	66.7	11	21.6	6	11.8	51	100.0
SELECTIVE	476	38.4	500	40.3	264	21.3	431	34.8	484	39.0	325	26.2	1240	100.0
TYPE OF INSTITUTION														
LAND GRANT.	44	77.2	7	12.3	6	10.5	46	80.7	3	5.3	8	14.0	57	100.0
NON-LAND GRANT.	463	37.5	509	41.2	262	21.2	419	34.0	492	39.9	323	26.2	1234	100.0
TOTALS.	507	39.3	516	40.0	268	20.8	465	36.0	495	38.3	331	25.6	1291	100.0

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART E -- QUESTIONS 5 AND 6 WITH PART A -- QUESTIONS 6 AND 7

WHETHER THERE ARE CHARGES FOR DUPLICATING GOVERNMENT DOCUMENTS
AND WHETHER THERE IS A PATRON OPERATED COPIER AT THE LIBRARY
TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

	CHARGE FOR DUPLICATING GOVERNMENT DOCUMENTS?						DOES LIBRARY HAVE A PATRON OPERATED COPIER?						ALL LIBRARIES	
	YES		NO		NO RESPONSE		YES		NO		NO RESPONSE			
TYPE OF LIBRARY	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ACADEMIC.	629	87.2	54	7.5	38	5.3	690	95.7	6	0.8	25	3.5	721	100.0
COURT	42	76.4	4	7.3	9	16.4	48	87.3	2	3.6	5	9.1	55	100.0
FEDERAL AGENCY.	11	27.5	26	65.0	3	7.5	35	87.5	4	10.0	1	2.5	40	100.0
LAW SCHOOL.	121	89.6	11	8.1	3	2.2	133	98.5	1	0.7	1	0.7	135	100.0
PUBLIC.	215	80.5	28	10.5	24	9.0	251	94.0	6	2.2	10	3.7	267	100.0
STATE AGENCY.	29	64.4	10	22.2	6	13.3	38	84.4	5	11.1	2	4.4	45	100.0
OTHER	19	67.9	7	25.0	2	7.1	21	75.0	5	17.9	2	7.1	28	100.0
TYPE OF DEPOSITORY														
REGIONAL.	44	86.3	5	9.8	2	3.9	47	92.2	3	5.9	1	2.0	51	100.0
SELECTIVE	1022	82.4	135	10.9	83	6.7	1169	94.3	26	2.1	45	3.6	1240	100.0
TYPE OF INSTITUTION														
LAND GRANT.	54	94.7	2	3.5	1	1.8	54	94.7	1	1.8	2	3.5	57	100.0
NON-LAND GRANT.	1012	82.0	138	11.2	84	6.8	1162	94.2	28	2.3	44	3.6	1234	100.0
TOTALS.	1066	82.6	140	10.8	85	6.6	1216	94.2	29	2.2	46	3.6	1291	100.0

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F -- QUESTION 1 WITH PART A -- QUESTIONS 6 AND 7

LIBRARIES ACCESSING OR NEEDING ONE OR MORE OF THE 44 SELECTED PUBLICATIONS TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

Table 1

	PAPER OR MICROFICHE		ELECTRONIC FORMAT NOW (ALL SOURCES)		ELECTRONIC FORMAT IN FUTURE				ALL LIBRARIES RESPONDING	
					CURRENT NEED		FUTURE NEED			
TYPE OF LIBRARY	N	%	N	%	N	%	N	%	N	%
ACADEMIC	671	93.1	549	76.1	240	33.3	301	41.7	721	100.0
COURT.	46	83.6	29	52.7	17	30.9	15	27.3	55	100.0
FEDERAL AGENCY	36	90.0	33	82.5	11	27.5	9	22.5	40	100.0
LAW SCHOOL	132	97.8	107	79.3	73	54.1	71	52.6	135	100.0
PUBLIC	249	93.3	125	46.8	85	31.8	96	36.0	267	100.0
STATE AGENCY	42	93.3	39	86.7	23	51.1	16	35.6	45	100.0
OTHER.	24	85.7	17	60.7	8	28.6	8	28.6	28	100.0
TYPE OF DEPOSITORY										
REGIONAL	48	94.1	48	94.1	31	60.8	26	51.0	51	100.0
SELECTIVE.	1152	92.9	851	68.6	426	34.4	490	39.5	1240	100.0
TYPE OF INSTITUTION										
LAND GRANT	52	91.2	48	84.2	25	43.9	25	43.9	57	100.0
NON-LAND GRANT	1148	93.0	851	69.0	432	35.0	491	39.8	1234	100.0
TOTALS	1200	93.0	899	69.6	457	35.4	516	40.0	1291	100.0

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F -- QUESTION 1 WITH PART A -- QUESTIONS 6 AND 7

LIBRARIES ACCESSING OR NEEDING ONE OR MORE OF THE 44 SELECTED PUBLICATIONS
TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

Table 2

	PAPER OR MICROFICHE		ELECTRONIC FORMAT NOW						ELECTRON. FORMAT FUTURE				ALL LIBRARIES RESPONDING	
			GOV'T DIR.		IN-HOUSE		COMMER VEN		CUR. NEED		FUTURE NEED			
TYPE OF LIBRARY	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ACADEMIC	671	93.1	74	10.3	91	12.6	528	73.2	240	33.3	301	41.7	721	100.0
COURT	46	83.6	2	3.6	2	3.6	29	52.7	17	30.9	15	27.3	55	100.0
FEDERAL AGENCY	36	90.0	14	35.0	6	15.0	32	80.0	11	27.5	9	22.5	40	100.0
LAW SCHOOL	132	97.8	0	0.0	12	8.9	106	78.5	73	54.1	71	52.6	135	100.0
PUBLIC	249	93.3	24	9.0	23	8.6	113	42.3	85	31.8	96	36.0	267	100.0
STATE AGENCY	42	93.3	7	15.6	6	13.3	39	86.7	23	51.1	16	35.6	45	100.0
OTHER	24	85.7	4	14.3	2	7.1	16	57.1	8	28.6	8	28.6	28	100.0
TYPE OF DEPOSITORY														
REGIONAL	48	94.1	16	31.4	S	17.6	48	94.1	31	60.8	26	51.0	51	100.0
SELECTIVE	1152	92.9	109	8.8	133	10.7	815	65.7	426	34.4	490	39.5	1240	100.0
TYPE OF INSTITUTION														
LAND GRANT	52	91.2	19	33.3	9	15.8	45	78.9	25	43.9	25	43.9	57	100.0
NON-LAND GRANT	1148	93.0	106	8.6	133	10.8	818	66.3	432	35.0	491	39.8	1234	100.0
TOTALS	1200	93.0	125	9.7	142	11.0	863	66.8	457	35.4	516	40.0	1291	100.0

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F. - QUESTION 1. METHOD OF SEARCHING GOVERNMENT PUBLICATIONS

ALPHABETICAL BY PUBLICATION - PART 1

	TOTAL FOR PUBLICATION*		SEARCH IN							
			PAPER/ MICROFICHE		ELECTRONIC FORMAT NOW (ALL SOURCES)		ELECTRONIC FORMAT IN FUTURE			
							CURRENT NEED		FUTURE NEED	
PUBLICATION	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK
AGRICOLA (USDA)	541	19	122	28	480	6	16	41	31	42
APTIC	326	34	52	37	237	24	25	38	44	33
AQUACULTURE	373	29	46	39	291	18	15	43	46	32
AQUATIC SCIENCE AND FISHERIES	383	28	84	33	298	16	18	40	40	39
ATTORNEY GEN OPINION	407	24	316	19	56	39	78	15	105	10
BLS CONSUMER PRICE INDEX	864	8	704	9	329	12	109	8	131	6
BLS EMPLOYMENT STATISTICS	777	10	631	10	303	15	87	13	108	9
BLS LABOR FORCE	628	18	399	14	294	17	77	17	101	11
BLS LABOR STATISTICS	635	17	441	13	198	29	104	9	132	5
CASSIS	332	32	118	29	113	33	78	15	98	13
CHEMICAL REGULATIONS	313	37	44	40	188	30	46	26	65	23
CHILD ABUSE & NEGLECT	699	14	313	20	394	7	86	14	101	11
COALEX	96	44	16	44	8	44	36	32	42	35
CODE OF FEDERAL REGULATIONS	1162	2	1110	2	265	22	201	3	169	1
COLD REGIONS SCIENCE	135	43	42	41	75	37	19	39	24	43
COMMERCE BUSINESS DAILY	736	13	605	11	258	23	90	11	96	15
COMPTROLLER GENERAL DECISIONS	392	26	341	16	80	35	56	22	67	21
CRIS/ISDA (USDA)	332	32	38	43	284	20	10	44	23	44
DEFENSE ACQUISITION REGS	157	41	93	31	12	42	47	25	51	28
ENERGY DATA BASE	447	22	180	24	270	21	69	18	70	19
ERIC	959	7	759	7	657	1	58	21	73	17
FEDERAL ACQUISITION REGULATIONS	143	42	77	34	25	40	34	34	42	35

*Total count and percent is based on the 1291 libraries returning questionnaires that indicated that they searched the publication either in paper or microfiche, in electronic format, or had a need for the publication in electronic format. All other percentages are based on the total count for libraries searching that publication.

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F. - QUESTION 1. METHOD OF SEARCHING GOVERNMENT RESEARCH PUBLICATIONS

ALPHABETICAL BY PUBLICATION - PART 2

			SEARCH IN							
	TOTAL FOR PUBLICATION*		PAPER/ MICROFICHE		ELECTRONIC FORMAT NOW (ALL SOURCES)		ELECTRONIC FORMAT IN FUTURE			
							CURRENT NEED		FUTURE NEED	
PUBLICATION	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK
FEDERAL REGISTER	1152	3	1080	3	390	8	152	6	144	4
FISHERIES ABSTRACTS	238	39	124	26	75	37	42	28	49	29
FOREIGN TRADERS INDEX	294	38	39	42	204	28	27	37	49	29
GPO MONTHLY CATALOGUE	1215	1	1147	1	556	4	137	7	117	8
GPO SALES REFERENCE FILE	1054	5	987	5	321	14	153	5	97	14
HEALTH PLANNING & ADMINISTRATION	483	21	125	25	380	9	41	29	38	41
IRIS WATER QUALITY	316	36	49	38	223	25	36	32	41	37
LC MARC	771	11	291	21	603	2	49	24	47	31
MEDLINE	686	15	278	22	565	3	41	29	56	26
NATIONAL CRIMINAL JUSTICE REFERENCE	640	16	366	15	368	10	96	10	71	18
NTIS (GRA & I)	761	12	543	12	511	5	63	20	61	25
NUCLEAR REGULATORY COMMISSION DECISIONS	389	27	320	18	23	41	90	11	87	16
OFFICE OF LEGAL COUNSEL	209	40	124	26	11	43	66	19	67	21
SSIE (NTIS)	436	23	61	35	342	11	31	35	40	39
TRIS	366	30	60	36	291	18	16	41	41	37
TRADE OPPORTUNITIES	362	31	117	30	211	27	38	31	63	24
TSCA INITIAL INVENTORY	318	35	88	32	221	26	28	36	43	34
U.S. PRESIDENTIAL EXECUTIVE ORDERS	804	9	740	8	96	34	175	4	119	7
UNITED STATES CODE	1127	4	1078	4	176	31	205	2	153	3
UNITED STATES EXPORTS	398	25	242	23	157	32	52	23	68	20
UNITED STATES PUBLIC LAWS	1043	6	981	6	79	36	239	1	162	2
WATER RESOURCES ABSTRACTS	526	20	322	17	322	13	45	27	56	26

*Total count and percent is based on the 1291 libraries returning questionnaires that indicated that they searched the publication either in paper or microfiche, in electronic format, or had a need for the publication in electronic format. All other percentages are based on the total count for libraries searching that publication.

JOINT COMMITTEE ON PRINTING -- QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F -- QUESTION 1 -- METHOD OF SEARCHING GOVERNMENT RESEARCH PUBLICATIONS

ALPHABETICAL BY PUBLICATION

					ELECTRONIC FORMAT NOW						ELEC FORMAT IN FUTURE			
	TOTAL FOR PUBLICATION*		PAPER OR MICROFICHE		GOV'T DIR		IN-HOUSE		COMMER VEND		CURRENTNEED		FUTURE NEED	
Publication	N	%	N	%	N	%	N	%	N	%	N	%	N	%
AGRICOLA (USDA)	541	41.91	122	22.55	2	0.37	12	2.22	468	86.51	16	2.96	31	5.73
APTIC	326	25.25	52	15.95	0	0.00	4	1.23	233	71.47	25	7.67	44	13.50
AQUACULTURE	373	28.89	46	12.33	0	0.00	5	1.34	286	76.68	15	4.02	46	12.33
AQUATIC SCI & FISHERIES	383	29.67	84	21.93	0	0.00	4	1.04	294	76.76	18	4.70	40	10.44
ATTORNEY GEN OPINION	407	31.53	316	77.64	4	0.98	3	0.74	51	12.53	78	19.16	105	25.80
BLS CONSUMER PRICE INDEX	864	66.92	704	81.48	1	0.12	7	0.81	321	37.15	109	12.62	131	15.16
BLS EMPLOYMENT STATISTICS	777	60.19	631	81.21	1	0.13	5	0.64	297	38.22	87	11.20	108	13.90
BLS LABOR FORCE	628	48.64	399	63.54	1	0.16	6	0.96	287	45.70	77	12.26	101	16.08
BLS LABOR STATISTICS	635	49.19	441	69.45	3	0.47	9	1.42	186	29.29	104	16.38	132	20.79
CASSIS	332	25.72	118	35.54	29	8.73	4	1.20	82	24.70	78	23.49	98	29.52
CHEMICAL REGULATIONS	313	24.24	44	14.06	0	0.00	2	0.64	186	59.42	46	14.70	65	20.77
CHILD ABUSE & NEGLECT	699	54.14	313	44.78	0	0.00	11	1.57	384	54.94	86	12.30	101	14.45
COALEX	96	7.44	16	16.67	0	0.00	1	1.04	7	7.29	36	37.50	42	43.75
CODE OF FEDERAL REGULATIONS	1162	90.01	1110	95.52	4	0.34	9	0.77	259	22.29	201	17.30	169	14.54
COLD REGIONS SCIENCE	135	10.46	42	31.11	1	0.74	1	0.74	73	54.07	19	14.07	24	17.78
COMMERCE BUSINESS DAILY	736	57.01	605	82.20	0	0.00	4	0.54	254	34.51	90	12.23	96	13.04
COMPTROLLER GEN DECISIONS	392	30.36	341	86.99	7	1.79	4	1.02	76	19.39	56	14.29	67	17.09
CRIS/IDSA (USDA)	332	25.72	38	11.45	0	0.00	6	1.81	278	83.73	10	3.01	23	6.93
DEFENSE ACQUISITION REGS	157	12.16	93	59.24	2	1.27	1	0.64	9	5.73	47	29.94	51	32.48
ENERGY DATA BASE	447	34.62	180	40.27	20	4.47	5	1.12	259	57.94	69	15.44	70	15.66
ERIC	959	74.28	759	79.14	0	0.00	31	3.23	633	66.01	58	6.05	73	7.61
FEDERAL ACQUISITION REGS	143	11.08	77	53.85	2	1.40	2	1.40	22	15.38	34	23.78	42	29.37
FEDERAL REGISTER	1152	89.23	1080	93.75	1	0.09	4	0.35	386	33.51	152	13.19	144	12.50
FISHERIES ABSTRACTS	238	18.44	124	52.10	0	0.00	2	0.84	73	30.67	42	17.65	49	20.59
FOREIGN TRADERS INDEX	294	22.77	39	13.27	0	0.00	6	2.04	198	67.35	27	9.18	49	16.67
GPO MONTHLY CATALOGUE	1215	94.11	1147	94.40	3	0.25	15	1.23	543	44.69	137	11.28	117	9.63
GPO SALES REFERENCE FILE	1054	81.64	987	93.64	5	0.47	4	0.38	314	29.79	153	14.52	97	9.20
HEALTH PLANNING & ADM	483	37.41	125	25.88	29	6.00	8	1.66	359	74.33	41	8.49	38	7.87
IRIS WATER QUALITY	316	24.48	49	15.51	2	0.63	1	0.32	220	69.62	36	11.39	41	12.97
LC MARC	771	59.72	291	37.74	8	1.04	56	7.26	562	72.89	49	6.36	47	6.10
MEDLINE	686	53.14	278	40.52	69	10.06	16	2.33	525	76.53	41	5.98	56	8.16
NATL CRIMINAL JUSTICE REF	640	49.57	366	57.19	3	0.47	7	1.09	361	56.41	96	15.00	71	11.09
NTIS (GRA & I)	761	58.95	543	71.35	3	0.39	15	1.97	499	65.57	63	8.28	61	8.02
NUCLEAR REG COMM DECS	389	30.13	320	82.26	2	0.51	3	0.77	20	5.14	90	23.14	87	22.37
OFFICE OF LEGAL COUNSEL	209	16.19	124	59.33	3	1.44	2	0.96	8	3.83	66	31.58	67	32.06
SSIE (NTIS)	436	33.77	61	13.99	0	0.00	11	2.52	332	76.15	31	7.11	40	9.17
TRIS	366	28.35	60	16.39	0	0.00	8	2.19	283	77.32	16	4.37	41	11.20
TRADE OPPORTUNITIES	362	28.04	117	32.32	0	0.00	5	1.38	206	56.91	38	10.50	63	17.40
TSCA INITIAL INVENTORY	318	24.63	88	27.67	6	1.89	3	0.94	216	67.92	28	8.81	43	13.52
U.S. PRES EX ORDERS	804	62.28	740	92.04	4	0.50	6	0.75	91	11.32	175	21.77	119	14.80
UNITED STATES CODE	1127	87.30	1078	95.65	5	0.44	8	0.71	169	15.00	205	18.19	153	13.58
UNITED STATES EXPORTS	398	30.83	242	60.80	0	0.00	8	2.01	149	37.44	52	13.07	68	17.09
UNITED STATES PUBLIC LAWS	1043	80.79	981	94.06	7	0.67	5	0.48	73	7.00	239	22.91	162	15.53
WATER RESOURCES ABSTRACTS	526	40.74	322	61.22	7	1.33	4	0.76	317	60.27	45	8.56	56	10.65

*Total count and percent is based on the 1291 libraries returning questionnaires that indicated that they searched the publication either in paper or microfiche, in electronic format, or had a need for the publication in electronic format. All other percentages are based on the total count for libraries searching that publication.

JOINT COMMITTEE ON PRINTING -- QUESTIONNAIRE TO DEPOSITORY LIBRARIES
PART F -- QUESTION 1 -- METHOD OF SEARCHING GOVERNMENT RESEARCH PUBLICATIONS
ALPHABETICAL BY PUBLICATION -- REGIONAL DEPOSITORY LIBRARIES ONLY

	TOTAL FOR PUBLICATION*		PAPER OR MICROFICHE		ELECTRONIC FORMAT NOW						ELEC FORMAT IN FUTURE			
					GOV'T DIR		IN-HOUSE		COMMER VEND		CURRENTNEED		FUTURE NEED	
Publication	N	%	N	%	N	%	N	%	N	%	N	%	N	%
AGRICOLA (USDA).	45	88.24	24	53.33	1	2.22	0	0.00	40	88.89	0	0.00	3	6.67
APTIC.	34	66.67	10	29.41	0	0.00	0	0.00	26	76.47	3	8.82	3	8.82
AQUACULTURE.	40	78.43	9	22.50	0	0.00	0	0.00	34	85.00	0	0.00	4	10.00
AQUATIC SCI & FISHERIES.	41	80.39	15	36.59	0	0.00	0	0.00	32	78.05	0	0.00	5	12.20
ATTORNEY GEN OPINION	27	52.94	18	66.67	0	0.00	0	0.00	2	7.41	6	22.22	8	29.63
BLS CONSUMER PRICE INDEX	48	94.12	41	85.42	0	0.00	0	0.00	34	70.83	5	10.42	2	4.17
BLS EMPLOYMENT STATISTICS.	46	90.20	39	84.78	0	0.00	0	0.00	31	67.39	5	10.87	3	6.52
BLS LABOR FORCE.	43	84.31	32	74.42	0	0.00	0	0.00	30	69.77	4	9.30	3	6.98
BLS LABOR STATISTICS	41	80.39	32	78.05	0	0.00	1	2.44	23	56.10	9	21.95	3	7.32
CASSIS	42	82.35	19	45.24	7	16.67	1	2.38	16	38.10	10	23.81	6	14.29
CHEMICAL REGULATIONS	32	62.75	7	21.88	0	0.00	0	0.00	19	59.38	8	25.00	3	9.38
CHILD ABUSE & NEGLECT.	46	90.20	19	41.30	0	0.00	0	0.00	36	78.26	5	10.87	2	4.35
COALEX	16	31.37	6	37.50	0	0.00	0	0.00	1	6.25	6	37.50	7	43.75
CODE OF FEDERAL REGULATIONS.	49	96.08	48	97.96	0	0.00	0	0.00	15	30.61	13	26.53	9	18.37
COLD REGIONS SCIENCE	16	31.37	7	43.75	1	6.25	0	0.00	4	25.00	4	25.00	4	25.00
COMMERCE BUSINESS DAILY.	49	96.08	45	91.84	0	0.00	0	0.00	27	55.10	6	12.24	5	10.20
COMPTROLLER GEN DECISIONS.	30	58.82	27	90.00	0	0.00	0	0.00	2	6.67	7	23.33	7	23.33
CRIS/ISDA (USDA)	40	78.43	9	22.50	0	0.00	0	0.00	33	82.50	3	7.50	4	10.00
DEFENSE ACQUISITION REGS	25	49.02	19	76.00	0	0.00	0	0.00	1	4.00	7	28.00	7	28.00
ENERGY DATA BASE	45	88.24	24	53.33	2	4.44	0	0.00	34	75.56	5	11.11	4	8.89
ERIC	50	98.04	47	94.00	0	0.00	1	2.00	45	90.00	3	6.00	1	2.00
FEDERAL ACQUISITION REGS	21	41.18	12	57.14	0	0.00	0	0.00	4	19.05	5	23.81	7	33.33
FEDERAL REGISTER	49	96.08	47	95.92	0	0.00	0	0.00	29	59.18	8	16.33	4	8.16
FISHERIES ABSTRACTS.	35	68.63	24	68.57	0	0.00	0	0.00	9	25.71	6	17.14	7	20.00
FOREIGN TRADERS INDEX.	31	60.78	5	16.13	0	0.00	1	3.23	21	67.74	4	12.90	4	12.90
GPO MONTHLY CATALOGUE.	50	98.04	48	96.00	0	0.00	1	2.00	42	84.00	4	8.00	1	2.00
GPO SALES REFERENCE FILE	47	92.16	47	100.00	0	0.00	0	0.00	31	65.96	7	14.89	1	2.13
HEALTH PLANNING & ADM.	38	74.51	16	42.11	3	7.89	0	0.00	32	84.21	2	5.26	1	2.63
IRIS WATER QUALITY	35	68.63	8	22.86	1	2.86	0	0.00	22	62.86	4	11.43	7	20.00
LC MARC.	44	86.27	22	50.00	1	2.27	6	13.64	36	81.82	0	0.00	3	6.82
MEDLINE.	50	98.04	27	54.00	8	16.00	0	0.00	40	80.00	1	2.00	3	6.00
NATL CRIMINAL JUSTICE REF.	47	92.16	28	59.57	0	0.00	0	0.00	37	78.72	4	8.51	3	6.38
NTIS (GRA & I)	49	96.08	44	89.80	0	0.00	0	0.00	44	89.80	3	6.12	1	2.04
NUCLEAR REG COMM DECS.	32	62.75	27	84.38	0	0.00	0	0.00	0	0.00	11	34.38	9	28.13
OFFICE OF LEGAL COUNSEL.	13	25.49	5	38.46	0	0.00	0	0.00	0	0.00	6	46.15	5	38.46
SSIE (NTIS).	46	90.20	9	19.57	0	0.00	1	2.17	36	78.26	4	8.70	3	6.52
TRIS	43	84.31	13	30.23	0	0.00	1	2.33	35	81.40	2	4.65	2	4.65
TRADE OPPORTUNITIES.	33	64.71	12	36.36	0	0.00	0	0.00	24	72.73	4	12.12	3	9.09
TSCA INITIAL INVENTORY	36	70.59	16	44.44	0	0.00	0	0.00	23	63.89	4	11.11	5	13.89
U.S. PRES EX ORDERS.	47	92.16	43	91.49	0	0.00	0	0.00	7	14.89	19	40.43	5	10.64
UNITED STATES CODE	47	92.16	45	95.74	0	0.00	0	0.00	6	12.77	14	29.79	8	17.02
UNITED STATES EXPORTS.	36	70.59	23	63.89	0	0.00	0	0.00	17	47.22	8	22.22	4	11.11
UNITED STATES PUBLIC LAWS.	49	96.08	46	93.88	0	0.00	0	0.00	4	8.16	19	38.78	7	14.29
WATER RESOURCES ABSTRACTS.	46	90.20	34	73.91	1	2.17	0	0.00	35	76.09	2	4.35	3	6.52

*Total count and percent is based on the 51 libraries returning questionnaires that indicated that they searched the publication either in paper or microfiche, in electronic format, or had a need for the publication in electronic format. All other percentages are based on the total count for libraries searching that publication.

JOINT COMMITTEE ON PRINTING -- QUESTIONNAIRE TO DEPOSITORY LIBRARIES
PART F -- QUESTION 1 -- METHODS OF SEARCHING GOVERNMENT RESEARCH PUBLICATIONS
PUBLICATIONS IN DESCENDING ORDER OF OCCURRENCE

					ELECTRONIC FORMAT NOW						ELEC FORMAT IN FUTURE			
	TOTAL FOR PUBLICATION*		PAPER OR MICROFICHE		GOV'T DIR		IN-HOUSE		COMMER VEND		CURRENTNEED		FUTURE NEED	
Publication	N	%	N	%	N	%	N	%	N	%	N	%	N	%
GPO MONTHLY CATALOG	1215	94.11	1147	94.40	3	0.25	15	1.23	543	44.69	137	11.28	117	9.63
CODE OF FEDERAL REGULATIONS	1162	90.01	1110	95.52	4	0.34	9	0.77	259	22.29	201	17.30	169	14.54
FEDERAL REGISTER	1152	89.23	1080	93.75	1	0.09	4	0.35	386	33.51	152	13.19	144	12.50
UNITED STATES CODE	1127	87.30	1078	95.65	5	0.44	8	0.71	169	15.00	205	18.19	153	13.58
GPO SALES REFERENCE FILE	1054	81.64	987	93.64	5	0.47	4	0.38	314	29.79	153	14.52	97	9.20
UNITED STATES PUBLIC LAWS	1043	80.79	981	94.06	7	0.67	5	0.48	73	7.00	239	22.91	162	15.53
ERIC	959	74.28	759	79.14	0	0.00	31	3.23	633	66.01	58	6.05	73	7.61
BLS CONSUMER PRICE INDEX	864	66.92	704	81.48	1	0.12	7	0.81	321	37.15	109	12.62	131	15.16
U.S. PRES EX ORDERS	804	62.28	740	92.04	4	0.50	6	0.75	91	11.32	175	21.77	119	14.80
BLS EMPLOYMENT STATISTICS	777	60.19	631	81.21	1	0.13	5	0.64	297	38.22	87	11.20	108	13.90
LC MARC	771	59.72	291	37.74	8	1.04	56	7.26	562	72.89	49	6.36	47	6.10
NTIS (GRA & I)	761	58.95	543	71.35	3	0.39	15	1.97	499	65.57	63	8.28	61	8.02
COMMERCE BUSINESS DAILY	736	57.01	605	82.20	0	0.00	4	0.54	254	34.51	90	12.23	96	13.04
CHILD ABUSE & NEGLECT	699	54.14	313	44.78	0	0.00	11	1.57	384	54.94	86	12.30	101	14.45
MEDLINE	686	53.14	278	40.52	69	10.06	16	2.33	525	76.53	41	5.98	56	8.16
NATL CRIMINAL JUSTICE REF	640	49.57	366	57.19	3	0.47	7	1.09	361	56.41	96	15.00	71	11.09
BLS LABOR STATISTICS	635	49.19	441	69.45	3	0.47	9	1.42	186	29.29	104	16.38	132	20.79
BLS LABOR FORCE	628	48.64	399	63.54	1	0.16	6	0.96	287	45.70	77	12.26	101	16.08
AGRICOLA (USDA)	541	41.91	122	22.55	2	0.37	12	2.22	468	86.51	16	2.96	31	5.73
WATER RESOURCES ABSTRACTS	526	40.74	322	61.22	7	1.33	4	0.76	317	60.27	45	8.56	56	10.65
HEALTH PLANNING & ADM	483	37.41	125	25.88	29	6.00	8	1.66	359	74.33	41	8.49	38	7.87
ENERGY DATA BASE	447	34.62	180	40.27	20	4.47	5	1.12	259	57.94	69	15.44	70	15.66
SSIE (NTIS)	436	33.77	61	13.99	0	0.00	11	2.52	332	76.15	31	7.11	40	9.17
ATTORNEY GEN OPINION	407	31.53	316	77.64	4	0.98	3	0.74	51	12.53	78	19.16	105	25.80
UNITED STATES EXPORTS	398	30.83	242	60.80	0	0.00	8	2.01	149	37.44	52	13.07	68	17.09
COMPTROLLER GEN DECISIONS	392	30.36	341	86.99	7	1.79	4	1.02	76	19.39	56	14.29	67	17.09
NUCLEAR REG COMM DECS	389	30.13	320	82.26	2	0.51	3	0.77	20	5.14	90	23.14	87	22.37
AQUATIC SCI & FISHERIES	383	29.67	84	21.93	0	0.00	4	1.04	294	76.76	18	4.70	40	10.44
AQUACULTURE	373	28.89	46	12.33	0	0.00	5	1.34	286	76.68	15	4.02	46	12.33
TRIS	366	28.35	60	16.39	0	0.00	8	2.19	283	77.32	16	4.37	41	11.20
TRADE OPPORTUNITIES	362	28.04	117	32.32	0	0.00	5	1.38	206	56.91	38	10.50	63	17.40
CASSIS	332	25.72	118	35.54	29	8.73	4	1.20	82	24.70	78	23.49	98	29.52
CRIS/ISDA (USDA)	332	25.72	38	11.45	0	0.00	6	1.81	278	83.73	10	3.01	23	6.93
APTIC	326	25.25	52	15.95	0	0.00	4	1.23	233	71.47	25	7.67	44	13.50
TSCA INITIAL INVENTORY	318	24.63	88	27.67	6	1.89	3	0.94	216	67.92	28	8.81	43	13.52
IRIS WATER QUALITY	316	24.48	49	15.51	2	0.63	1	0.32	220	69.62	36	11.39	41	12.97
CHEMICAL REGULATIONS	313	24.24	44	14.06	0	0.00	2	0.64	186	59.42	46	14.70	65	20.77
FOREIGN TRADERS INDEX	294	22.77	39	13.27	0	0.00	6	2.04	198	67.35	27	9.18	49	16.67
FISHERIES ABSTRACTS	238	18.44	124	52.10	0	0.00	2	0.84	73	30.67	42	17.65	49	20.59
OFFICE OF LEGAL COUNSEL	209	16.19	124	59.33	3	1.44	2	0.96	8	3.83	66	31.58	67	32.06
DEFENSE ACQUISITION REGS	157	12.16	93	59.24	2	1.27	1	0.64	9	5.73	47	29.94	51	32.48
FEDERAL ACQUISITION REGS	143	11.08	77	53.85	2	1.40	2	1.40	22	15.38	34	23.78	42	29.37
COLD REGIONS SCIENCE	135	10.46	42	31.11	1	0.74	1	0.74	73	54.07	19	14.07	24	17.78
COALEX	96	7.44	16	16.67	0	0.00	1	1.04	7	7.29	36	37.50	42	43.75

*Total count and percent is based on the 1291 libraries returning questionnaires that indicated that they searched the publication either in paper or microfiche, in electronic format, or had a need for the publication in electronic format. All other percentages are based on the total count for libraries searching that publication.

JOINT COMMITTEE ON PRINTING -- QUESTIONNAIRE TO DEPOSITORY LIBRARIES
PART F -- QUESTION 1 -- METHOD OF SEARCHING GOVERNMENT RESEARCH PUBLICATIONS
PUBLICATIONS IN DESCENDING ORDER OF OCCURRENCE -- REGIONAL DEPOSITORY LIBRARIES ONLY

					ELECTRONIC FORMAT NOW						ELEC FORMAT IN FUTURE			
	TOTAL FOR PUBLICATION*		PAPER OR MICROFICHE		GOV'T DIR		IN-HOUSE		COMMER VEND		CURRENTNEED		FUTURE NEED	
Publication	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ERIC	50	98.04	47	94.00	0	0.00	1	2.00	45	90.00	3	6.00	1	2.00
GPO MONTHLY CATALOGUE	50	98.04	48	96.00	0	0.00	1	2.00	42	84.00	4	8.00	1	2.00
MEDLINE	50	98.04	27	54.00	8	16.00	0	0.00	40	80.00	1	2.00	3	6.00
CODE OF FEDERAL REGULATIONS	49	96.08	48	97.96	0	0.00	0	0.00	15	30.61	13	26.53	9	18.37
COMMERCE BUSINESS DAILY	49	96.08	45	91.84	0	0.00	0	0.00	27	55.10	6	12.24	5	10.20
FEDERAL REGISTER	49	96.08	47	95.92	0	0.00	0	0.00	29	59.18	8	16.33	4	8.16
NTIS (GRA & I)	49	96.08	44	89.80	0	0.00	0	0.00	44	89.80	3	6.12	1	2.04
UNITED STATES PUBLIC LAWS	49	96.08	46	93.88	0	0.00	0	0.00	4	8.16	19	38.78	7	14.29
BLS CONSUMER PRICE INDEX	48	94.12	41	85.42	0	0.00	0	0.00	34	70.83	5	10.42	2	4.17
GPO SALES REFERENCE FILE	47	92.16	47	100.00	0	0.00	0	0.00	31	65.96	7	14.89	1	2.13
NATL CRIMINAL JUSTICE REF	47	92.16	28	59.57	0	0.00	0	0.00	37	78.72	4	8.51	3	6.38
U.S. PRES EX ORDERS	47	92.16	43	91.49	0	0.00	0	0.00	7	14.89	19	40.43	5	10.64
UNITED STATES CODE	47	92.16	45	95.74	0	0.00	0	0.00	6	12.77	14	29.79	8	17.02
BLS EMPLOYMENT STATISTICS	46	90.20	39	84.78	0	0.00	0	0.00	31	67.39	5	10.87	3	6.52
CHILD ABUSE & NEGLECT	46	90.20	19	41.30	0	0.00	0	0.00	36	78.26	5	10.87	2	4.35
SSIE (NTIS)	46	90.20	9	19.57	0	0.00	1	2.17	36	78.26	4	8.70	3	6.52
WATER RESOURCES ABSTRACTS	46	90.20	34	73.91	1	2.17	0	0.00	35	76.09	2	4.35	3	6.52
AGRICOLA (USDA)	45	88 24	24	53.33	1	2.22	0	0.00	40	88.89	0	0.00	3	6.67
ENERGY DATA BASE	45	88.24	24	53.33	2	4.44	0	0.00	34	75.56	5	11.11	4	8.89
LC MARC	44	86.27	22	50.00	1	2.27	6	13.64	36	81.82	0	0.00	3	6.82
BLS LABOR FORCE	43	84.31	32	74.42	0	0.00	0	0.00	30	69.77	4	9.30	3	6.98
TRIS	43	84.31	13	30.23	0	0.00	1	2.33	35	81.40	2	4.65	2	4.65
CASSIS	42	82.35	19	45.24	7	16.67	1	2.38	16	38.10	10	23.81	6	14.29
AQUATIC SCI & FISHERIES	41	80.39	15	36.59	0	0.00	0	0.00	32	78.05	0	0.00	5	12.20
BLS LABOR STATISTICS	41	80.39	32	78.05	0	0.00	1	2.44	23	56.10	9	21.95	3	7.32
AQUACULTURE	40	78.43	9	22.50	0	0.00	0	0.00	34	85.00	0	0.00	4	10.00
CRIS/IDSA (USDA)	40	78.43	9	22.50	0	0.00	0	0.00	33	82.50	3	7.50	4	10.00
HEALTH PLANNING & ADM	38	74.51	16	42.11	3	7.89	0	0.00	32	84.21	2	5.26	1	2.63
TSCA INITIAL INVENTORY	36	70.59	16	44.44	0	0.00	0	0.00	23	63.89	4	11.11	5	13.89
UNITED STATES EXPORTS	36	70.59	23	63.89	0	0.00	0	0.00	17	47.22	8	22.22	4	11.11
FISHERIES ABSTRACTS	35	68.63	24	68.57	0	0.00	0	0.00	9	25.71	6	17.14	7	20.00
IRIS WATER QUALITY	35	68.63	8	22.86	1	2.86	0	0.00	22	62.86	4	11.43	7	20.00
APTIC	34	66.67	10	29.41	0	0.00	0	0.00	26	76.47	3	8.82	3	8.82
TRADE OPPORTUNITIES	33	64.71	12	36.36	0	0.00	0	0.00	24	72.73	4	12.12	3	9.09
CHEMICAL REGULATIONS	32	62.75	7	21.88	0	0.00	0	0.00	19	59.38	8	25.00	3	9.38
NUCLEAR REG COMM DECS	32	62.75	27	84.38	0	0.00	0	0.00	0	0.00	11	34.38	9	28.13
FOREIGN TRADERS INDEX	31	60.78	5	16.13	0	0.00	1	3.23	21	67.74	4	12.90	4	12.90
COMPTROLLER GEN DECISIONS	30	58.82	27	90.00	0	0.00	0	0.00	2	6.67	7	23.33	7	23.33
ATTORNEY GEN OPINION	27	52.94	18	66.67	0	0.00	0	0.00	2	7.41	6	22.22	8	29.63
DEFENSE ACQUISITION REGS	25	49.02	19	76.00	0	0.00	0	0.00	1	4.00	7	28.00	7	28.00
FEDERAL ACQUISITION REGS	21	41.18	12	57.14	0	0.00	0	0.00	4	19.05	5	23.81	7	33.33
COALEX	16	31.37	6	37.50	0	0.00	0	0.00	1	6.25	6	37.50	7	43.75
COLD REGIONS SCIENCE	16	31.37	7	43.75	1	6.25	0	0.00	4	25.00	4	25.00	4	25.00
OFFICE OF LEGAL COUNSEL	13	25.49	5	38.46	0	0.00	0	0.00	0	0.00	6	46.15	5	38.46

*Total count and percent is based on the 51 libraries returning questionnaires that indicated that they searched the publication either in paper or microfiche, in electronic format, or had a need for the publication in electronic format. All other percentages are based on the total count for libraries searching that publication.

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F -- QUESTION 1
METHOD OF SEARCHING GOVERNMENT RESEARCH PUBLICATIONS
ALPHABETICAL BY PUBLICATION BROKEN DOWN BY TYPE OF LIBRARY

LIBRARIES WITH ELECTRONIC FORMAT NOW PT. 1

	TYPE OF LIBRARY														TOTAL FOR PUB-LICATION	
	ACADEM.		COURT		FED AGY		LAW SCH		PUBLIC		STATE AG		OTHER			
PUBLICATION	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK
AGRICOLA (USDA)	352	6	2	14	17	10	7	31	69	3	28	6	5	8	480	6
APTIC	163	23	1	31	6	31	9	24	38	20	17	22	3	16	237	24
AQUACULTURE	208	16	2	14	6	31	8	26	43	13	22	15	2	24	291	18
AQUATIC SCI & FISHERIES	219	13	2	14	9	22	8	26	39	18	19	20	2	24	298	16
ATTORNEY GEN OPINION	10	39	6	8	7	27	28	9	1	40	3	36	1	36	56	39
BLS CONSUMER PRICE INDEX	224	12	3	10	12	15	13	15	49	7	26	10	2	24	329	12
BLS EMPLOYMENT STATISTICS	214	14	2	14	10	19	10	20	45	10	20	18	2	24	303	15
BLS LABOR FORCE	208	16	2	14	10	19	12	18	42	15	18	21	2	24	294	17
BLS LABOR STATISTICS	148	26	1	31	8	25	7	31	17	32	15	26	2	24	198	29
CASSIS	65	32	1	31	4	38	4	38	29	28	8	30	2	24	113	33
CHEMICAL REGULATIONS	130	29	2	14	4	38	10	20	33	26	7	31	2	24	188	30
CHILD ABUSE & NEGLECT	288	7	3	10	9	22	15	13	45	10	30	3	4	12	394	7
COALEX	4	43	0	41	2	41	0	43	0	42	1	42	1	36	8	44
CODE OF FEDERAL REGULATIONS	82	31	27	1	20	3	94	1	24	29	14	28	4	12	265	22
COLD REGIONS SCIENCE	54	33	0	41	8	25	0	43	7	34	4	35	2	24	75	37
COMMERCE BUSINESS DAILY	171	22	2	14	18	6	10	20	36	23	17	22	4	12	258	23
COMPTROLLER GENERAL DECISIONS	5	41	9	4	11	16	48	5	2	38	3	36	2	24	80	35
CRIS/ISDA (USDA)	208	16	1	31	7	27	8	26	35	24	21	16	4	12	284	20
DEFENSE ACQUISITION REGS	5	41	0	41	2	41	1	40	1	40	2	40	1	36	12	42
ENERGY DATA BASE	193	20	2	14	16	11	8	26	23	30	23	13	5	8	270	21
ERIC	492	1	2	14	18	6	24	10	76	2	35	1	10	2	657	1
FEDERAL ACQUISTION REGUATIONS	12	38	1	31	5	34	1	40	2	38	3	36	1	36	25	40

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F -- QUESTION 1
METHOD OF SEARCHING GOVERNMENT RESEARCH PUBLICATIONS
ALPHABETICAL BY PUBLICATION BROKEN DOWN BY CATEGORY OF LIBRARY AND TYPE OF FORMAT

LIBRARIES WITH ELECTRONIC FORMAT NOW PT. 2

	TYPE OF LIBRARY														TOTAL FOR PUB-LICATION	
	ACADEM.		COURT		FED AGY		LAW SCH		PUBLIC		STATE AG		OTHER			
PUBLICATION	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK
FEDERAL REGISTER	191	21	23	3	20	3	85	3	47	9	21	16	3	16	390	8
FISHERIES ABSTRACTS	54	33	0	41	3	40	1	40	10	33	5	33	2	24	75	37
FOREIGN TRADERS INDEX	140	28	1	31	5	34	6	35	39	18	12	29	1	36	204	28
GPO MONTHLY CATALOGUE	394	3	2	14	26	1	31	7	65	4	31	2	7	5	556	4
GPO SALES REFERENCE FILE	214	14	2	14	14	13	14	14	49	7	25	12	3	16	321	14
HEALTH PLANNING AND ADMINISTRATION	280	8	1	31	10	19	11	19	43	13	28	6	7	5	380	9
IRIS WATER QUALITY	153	25	2	14	7	27	8	26	35	24	16	24	2	24	223	25
LC MARC	384	4	7	7	19	5	70	4	80	1	30	3	13	1	603	2
MEDLINE	435	2	1	31	15	12	13	15	64	5	28	6	9	3	565	3
NATIONAL CRIMINAL JUSTICE REFERENCE	265	9	4	9	11	16	17	11	38	20	28	6	5	8	368	10
NTIX (GRA & I)	372	5	2	14	25	2	17	11	58	6	29	5	8	4	511	5
NUCLEAR REGULATORY COMMISSION DECISIONS	7	40	3	10	1	44	10	20	0	42	1	42	1	36	23	41
OFFICE OF LEGAL COUNSEL	3	44	2	14	2	41	2	39	0	42	1	42	1	36	11	43
SSIE (NTIS)	245	10	2	14	18	6	9	24	42	15	20	18	6	7	342	11
TRIS	200	19	3	10	7	27	7	31	45	10	26	10	3	16	291	18
TRADE OPPORTUNITIES	145	27	1	31	5	34	6	35	38	20	15	26	1	36	211	27
TSCA INITIAL INVENTORY	156	24	1	31	6	31	6	35	33	26	16	24	3	16	221	26
U.S. PRESIDENTIAL EXECUTIVE ORDERS	24	36	9	4	11	16	42	6	4	35	3	36	3	16	96	34
UNITED STATES CODE	27	35	24	2	18	6	92	2	3	36	7	31	5	8	176	31
UNITED STATES EXPORTS	116	30	2	14	5	34	7	31	21	31	5	33	1	36	157	32
UNITED STATES PUBLIC LAWS	18	37	8	6	14	13	31	7	3	36	2	40	3	16	79	36
WATER RESOURCES ABSTRACTS	232	11	2	14	9	22	13	15	40	17	23	13	3	16	322	13

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F. -- QUESTION 1
METHOD OF SEARCHING GOVERNMENT RESEARCH PUBLICATIONS
ALPHABETICAL BY PUBLICATION BROKEN DOWN BY TYPE OF LIBRARY

LIBRARIES WITH CURRENT NEED FOR ELECTRONIC FORMAT PT. 1

	TYPE OF LIBRARY														TOTAL FOR PUB-LICATION	
	ACADEM.		COURT		FED AGY		LAW SCH		PUBLIC		STATE AG		OTHER			
PUBLICATION	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK
AGRICOLA (USDA)	6	43	1	26	0	22	2	34	4	35	2	19	1	18	16	41
APTIC.	16	34	0	37	0	22	1	37	7	28	0	40	1	18	25	38
AQUACULTURE.	10	41	0	37	1	15	0	43	4	35	0	40	0	31	15	43
AQUATIC SCI & FISHERIES.	13	39	0	37	0	22	1	37	4	35	0	40	0	31	18	40
ATTORNEY GEN OPINION	36	18	5	13	3	4	25	8	3	38	4	11	2	9	78	15
BLS CONSUMER PRICE INDEX	45	10	6	11	3	4	9	17	41	4	3	15	2	9	109	8
BLS EMPLOYMENT STATISTICS.	45	10	2	18	3	4	9	17	23	11	5	9	0	31	87	13
BLS LABOR FORCE.	44	13	1	26	3	4	7	21	19	12	2	19	1	18	77	17
BLS LABOR STATISTICS	58	6	1	26	3	4	9	17	24	10	7	5	2	9	104	9
CASSIS	44	13	2	18	0	22	10	16	16	16	4	11	2	9	78	15
CHEMICAL REGULATIONS	26	22	2	18	0	22	7	21	7	28	3	15	1	18	46	26
CHILD ABUSE & NEGLECT.	47	9	3	16	0	22	16	11	17	15	1	33	2	9	86	14
COALEX	22	26	1	26	1	15	6	24	3	38	3	15	0	31	36	32
CODE OF FEDERAL REGULATIONS.	113	3	6	11	3	4	12	14	54	1	8	4	5	1	201	3
COLD REGIONS SCIENCE	13	39	0	37	1	15	1	37	3	38	1	33	0	31	19	39
COMMERCE BUSINESS DAILY.	43	15	2	18	0	22	5	27	36	7	2	19	2	9	90	11
COMPTROLLER GENERAL DECISIONS.	18	32	7	8	2	12	15	12	7	28	6	6	1	18	56	22
CRIS/ISDA (USDA)	6	32	0	37	0	22	1	37	2	43	1	33	0	31	10	44
DEFENSE ACQUISITION REGS	19	29	2	18	4	2	4	29	15	18	2	19	1	18	47	25
ENERGY DATA BASE	45	10	1	26	0	22	8	20	12	21	2	19	1	18	69	18
ERIC.	34	19	1	26	0	22	7	21	13	20	2	19	1	18	58	21
FEDERAL ACQUISITION REGULATIONS.	16	34	1	26	4	2	3	31	8	25	1	33	1	18	34	34

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F. -- QUESTION 1

METHOD OF SEARCHING GOVERNMENT RESEARCH PUBLICATIONS
ALPHABETICAL BY PUBLICATION BROKEN DOWN BY TYPE OF LIBRARY

LIBRARIES WITH CURRENT NEED FOR ELECTRONIC FORMAT PT. 2

	TYPE OF LIBRARY														TOTAL FOR PUB-LICATION	
	ACADEM.		COURT		FED AGY		LAW SCH		PUBLIC		STATE AG		OTHER			
PUBLICATION	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK
FEDERAL REGISTER	78	5	8	6	3	4	17	10	36	7	6	6	4	3	152	6
FISHERIES ABSTRACTS	32	20	0	37	2	12	3	31	3	38	2	19	0	31	42	28
FOREIGN TRADERS INDEX	16	34	0	37	0	22	1	37	10	23	0	40	0	31	27	37
GPO MONTHLY CATALOGUE	48	8	12	1	0	22	35	2	37	6	4	11	1	18	137	7
GPO SALES REFERENCE FILE	58	6	12	1	2	12	35	2	41	4	2	19	3	6	153	5
HEALTH PLANNING AND ADMINISTRATION	25	23	2	18	1	15	4	29	8	25	1	33	0	31	41	29
IRIS WATER QUALITY	21	28	1	26	0	22	6	24	5	34	2	19	1	18	36	32
LC MARC	19	29	4	14	1	15	11	15	11	22	1	33	2	9	49	24
MEDLINE	19	29	3	16	0	22	6	24	8	25	2	19	3	6	41	29
NATIONAL CRIMINAL JUSTICE REFERENCE	38	17	8	6	0	22	29	6	18	13	2	19	1	18	96	10
NTIS (GRA & I)	22	26	4	14	0	22	18	9	14	19	3	15	2	9	63	20
NUCLEAR REGULATORY COMMISSION DECISIONS	39	16	7	8	1	15	27	7	7	28	6	6	3	6	90	11
OFFICE OF LEGAL COUNSEL	14	38	9	4	1	15	34	4	2	43	4	11	2	9	66	19
SSIE (NTIS)	25	23	0	37	0	22	0	43	6	33	0	40	0	31	31	35
TRIS	8	42	1	26	0	22	2	34	3	38	2	19	0	31	16	41
TRADE OPPORTUNITIES	18	32	1	26	0	22	1	37	16	16	2	19	0	31	38	31
TSCA INITIAL INVENTORY	15	37	2	18	0	22	3	31	7	28	1	33	0	31	28	36
U.S. PRESIDENTIAL EXECUTIVE ORDERS	80	4	10	3	6	1	31	5	33	9	11	3	4	3	175	4
UNITED STATES CODE	117	1	7	8	0	22	14	13	50	2	12	2	5	1	205	2
UNITED STATES EXPORTS	24	25	2	18	0	22	2	34	18	13	5	9	1	18	52	23
UNITED STATES PUBLIC LAWS	116	2	9	4	3	4	42	1	49	3	16	1	4	3	239	1
WATER RESOURCES ABSTRACTS	27	21	1	26	0	22	5	27	10	23	2	19	0	31	45	27

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F. QUESTION 1

METHOD OF SEARCHING GOVERNMENT PUBLICATIONS
ALPHABETICAL BY PUBLICATION BROKEN DOWN BY TYPE OF LIBRARY

LIBRARIES WITH FUTURE NEED FOR ELECTRONIC FORMAT PT. 1

	TYPE OF LIBRARY														TOTAL FOR PUB-LICATION	
	ACADEM.		COURT		FED AGY		LAW SCH		PUBLIC		STATE AG		OTHER			
PUBLICATION	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK
AGRICOLA (USDA)	13	43	0	26	0	19	5	32	11	24	2	17	0	26	31	42
APTIC	27	32	0	26	0	19	7	25	9	30	1	33	0	26	44	33
AQUACULTURE	29	28	0	26	0	19	7	25	9	30	1	33	0	26	46	32
AQUATIC SCI & FISHERIES	24	38	0	26	0	19	6	28	8	33	2	17	0	26	40	39
ATTORNEY GEN OPINION	53	12	7	1	0	19	24	1	17	18	2	17	2	3	105	10
BLS CONSUMER PRICE INDEX	79	6	2	11	0	19	8	21	38	6	1	33	3	2	131	6
BLS EMPLOYMENT STATISTICS	68	8	1	19	0	19	5	32	31	9	2	17	1	7	108	9
BLS LABOR FORCE	62	9	2	11	0	19	8	21	26	13	3	13	0	26	101	11
BLS LABOR STATISTICS	80	5	3	4	1	8	13	10	33	8	2	17	0	26	132	5
CASSIS	47	14	3	4	1	8	15	7	27	12	4	7	1	7	98	13
CHEMICAL REGULATIONS	35	21	3	4	1	8	13	10	10	27	3	13	0	26	65	23
CHILD ABUSE & NEGLECT	56	10	2	11	0	19	16	5	25	15	1	33	1	7	101	11
COALEX	27	32	2	11	0	19	4	37	5	41	3	13	1	7	42	35
CODE OF FEDERAL REGULATIONS	109	1	2	11	3	1	9	16	41	1	4	7	1	7	169	1
COLD REGIONS SCIENCE	18	41	0	26	0	19	1	43	4	43	1	33	0	26	24	43
COMMERCE BUSINESS DAILY	47	14	1	19	0	19	9	16	34	7	3	13	2	3	96	15
COMPTROLLER GENERAL DECISIONS	35	21	3	4	2	4	16	5	6	38	4	7	1	7	67	21
CRIS/ISDA (USDA)	13	43	0	26	0	19	1	43	7	35	2	17	0	26	23	44
DEFENSE ACQUISITION REGS	28	29	0	26	2	4	4	37	10	27	5	3	2	3	51	28
ENERGY DATA BASE	42	16	0	26	0	19	9	16	17	18	2	17	0	26	70	19
ERIC	34	24	2	11	0	19	6	28	29	11	2	17	0	26	73	17
FEDERAL ACQUISITION REGULATIONS	17	42	1	19	1	8	6	28	10	27	6	1	1	7	42	35

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F. QUESTION 1

METHOD OF SEARCHING GOVERNMENT PUBLICATIONS
ALPHABETICAL BY PUBLICATION BROKEN DOWN BY TYPE OF LIBRARY

LIBRARIES WITH FUTURE NEED FOR ELECTRONIC FORMAT PT. 2

	TYPE OF LIBRARY														TOTAL FOR PUB-LICATION	
	ACADEM.		COURT		FED AGY		LAW SCH		PUBLIC		STATE AG		OTHER			
PUBLICATION	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK	N	RANK
FEDERAL REGISTER	88	4	2	11	3	1	8	21	40	4	2	17	1	7	144	4
FISHERIES ABSTRACTS	34	24	0	26	1	8	2	41	8	33	4	7	0	26	49	29
FOREIGN TRADERS INDEX	23	39	0	26	2	4	4	37	17	18	2	17	1	7	49	29
GPO MONTHLY CATALOGUE	56	10	3	4	0	19	14	8	39	5	1	33	4	1	117	8
GPO SALES REFERENCE FILE	53	12	2	11	0	19	14	8	26	13	1	33	1	7	97	14
HEALTH PLANNING AND ADMINISTRATION	25	37	0	26	0	19	3	40	9	30	1	33	0	26	38	41
IRIS WATER QUALITY	27	32	0	26	0	19	2	41	7	35	5	3	0	26	41	37
LC MARC	23	39	3	4	1	8	7	25	11	24	1	33	1	7	47	31
MEDLINE	27	32	0	26	1	8	9	16	17	18	2	17	0	26	56	26
NATIONAL CRIMINAL JUSTICE REFERENCE	35	21	1	19	1	8	20	3	12	23	1	33	1	7	71	18
NTIS (GRA & I)	33	26	1	19	0	19	9	16	16	22	1	33	1	7	61	25
NUCLEAR REGULATORY COMMISSION DECISIONS	40	17	4	3	1	8	23	2	11	24	6	1	2	3	87	16
OFFICE OF LEGAL COUNSEL	36	20	1	19	1	8	19	4	5	41	4	7	1	7	67	21
SSIE (NTIS)	26	36	0	26	0	19	5	32	6	38	2	17	1	7	40	39
TRIS	28	29	0	26	0	19	5	32	6	38	2	17	0	26	41	37
TRADE OPPORTUNITIES	30	27	0	26	0	19	10	13	21	16	1	33	1	7	63	24
TSCA INITIAL INVENTORY	28	29	0	26	0	19	6	28	7	35	2	17	0	26	43	34
U.S. PRESIDENTIAL EXECUTIVE ORDERS	69	7	1	19	1	8	12	12	31	9	4	7	1	7	119	7
UNITED STATES CODE	97	2	3	4	2	4	5	32	41	1	5	3	0	26	153	3
UNITED STATES EXPORTS	39	19	0	26	0	19	8	21	18	17	2	17	1	7	68	20
UNITED STATES PUBLIC LAWS	96	3	6	2	3	1	10	13	41	1	5	3	1	7	162	2
WATER RESOURCES ABSTRACTS	40	17	0	26	0	19	10	13	4	43	2	17	0	26	56	26

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F -- QUESTION 1 -- METHODS OF SEARCHING OTHER GOVERNMENT RESEARCH PUBLICATIONS
ALPHABETICAL BY PUBLICATION

PUBLICATION	TOTAL FOR PUBLICATION*		PAPER OR MICROFICHE	
	COUNT	PERCENT	COUNT	PERCENT
ASI	2	0.16	2	100.00
BILINGUAL EDUCATION	1	0.08	0	0.00
BILLS	2	0.16	2	100.00
CAB	2	0.16	2	100.00
CENSUS	19	1.50	16	84.21
CIS	2	0.16	2	100.00
CLSI	1	0.08	0	0.00
CONGRESSIONAL DIRECTORY	2	0.16	1	50.00
CONGRESSIONAL DOCUMENTS	1	0.08	1	100.00
CONGRESSIONAL HEARING	1	0.08	1	100.00
CONGRESSIONAL REPORTS	1	0.08	1	100.00
CONGRESSIONAL RECORD	25	1.97	23	92.00
CONGRESSIONAL RECORD INDEX	3	0.24	3	100.00
DOMESTIC ASSISTANCE	1	0.08	1	100.00
DROLS/DTIC	4	0.32	2	50.00
DRUG CODE DIRECTORY	1	0.08	1	100.00
ECER	1	0.08	0	0.00
EELS	1	0.08	0	0.00
EPILEPSYLINE	3	0.24	0	0.00
EROS	1	0.08	1	100.00
FEDERAL TELEPHONE DIRECTORY	1	0.08	1	100.00
FEDEX	5	0.39	3	60.00
FIRE BASE	1	0.08	0	0.00
FISH & WILDLIFE SURVEY	7	0.55	3	42.86
FLITE	4	0.32	2	50.00
GAO	2	0.16	0	0.00
HANES	1	0.08	1	100.00
INDEX MEDICUS	1	0.08	1	100.00
IRS	7	0.55	7	100.00
JURIS	2	0.16	0	0.00
LEGIS	6	0.47	0	0.00
MEDLARS	5	0.39	0	0.00
MENTAL HEALTH	4	0.32	1	25.00
NASA RECON	13	1.02	9	69.23
NATIONAL REFERRAL CENTER	3	0.24	0	0.00
NEWS SEARCH INDEX	2	0.16	0	0.00
NLRB DECISIONS	4	0.32	4	100.00
NOAA	1	0.08	0	0.00
NUCLEAR SCIENCE	1	0.08	1	100.00
OSHA	7	0.55	6	85.71
PATENTS	17	1.34	10	58.82

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F -- QUESTION 1 -- METHODS OF SEARCHING OTHER GOVERNMENT RESEARCH PUBLICATIONS
ALPHABETICAL BY PUBLICATION - Continued

PUBLICATION	TOTAL FOR PUBLICATION*		PAPER OR MICROFICHE	
	COUNT	PERCENT	COUNT	PERCENT
PDQ DIRECTORY	3	0.24	0	0.00
PERSONNEL	2	0.16	0	0.00
PRODUCER PRICE	1	0.08	1	100.00
PUBLIC SCHOOL DIRECTORY	3	0.24	1	33.33
RTCS	1	0.08	1	100.00
SCAN	1	0.08	1	100.00
SCORPIO	6	0.47	0	0.00
SOCIAL SECURITY MANUAL	1	0.08	0	0.00
STAR	6	0.47	6	100.00
SUPREME COURT	1	0.08	1	100.00
TAX COURT	4	0.32	4	100.00
TRADEMARKS	1	0.08	1	100.00
TREATIES	4	0.32	3	75.00
U.S. REPORTS	10	0.79	10	100.00
USGS	1	0.08	1	100.00

*Total count and percent is based on 1291 libraries returning questionnaires that indicated that they searched the publication either on paper or microfiche, in electronic format, or had a need for the publication in electronic format. All other percentages are based on the total count for libraries searching that publication.

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F -- METHODS OF SEARCHING OTHER GOVERNMENT RESEARCH PUBLICATONS
ALPHABETICALLY BY PUBLICATION

	TOTAL FOR PUBLICATION*		ELECTRONIC FORMAT NOW						ELECTRONIC FORMAT IN FUTURE			
			GOV'T DIRECT		IN-HOUSE		COMMER VENDOR		CURRENT NEED		FUTURE NEED	
PUBLICATION	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT
ASI	2	0.16	0	0.00	0	0.00	2	100.00	0	0.00	0	0.00
BILLINGUAL EDUCATION	1	0.08	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00
BILLS	2	0.16	0	0.00	0	0.00	0	0.00	1	50.00	0	0.00
CAB	2	0.16	0	0.00	0	0.00	0	0.00	2	100.00	0	0.00
CENSUS	19	1.50	0	0.00	3	15.79	2	10.53	9	47.37	5	26.32
CIS	2	0.16	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
CLIS	1	0.08	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00
CONGRESS DIRECTORY	2	0.16	0	0.00	0	0.00	0	0.00	1	50.00	0	0.00
CONGRESS DOCUMENTS	1	0.08	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
CONGRESS HEAR	1	0.08	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
CONGRESS REPORTS	1	0.08	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
CONGRESSIONAL RECORD	25	1.97	0	0.00	0	0.00	4	16.00	12	48.00	3	12.00
CONGRESS RECORD INDEX	3	0.24	0	0.00	0	0.00	0	0.00	3	100.00	0	0.00
DOMESTIC ASSISTANCE	1	0.08	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00
DROLS├DTIC	4	0.32	4	100.00	0	0.00	0	0.00	0	0.00	0	0.00
DRUG CODE DIRECTORY	1	0.08	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00
ECER	1	0.08	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00
EELS	1	0.08	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00
EPILEPSYLINE	3	0.24	0	0.00	0	0.00	3	100.00	0	0.00	0	0.00
EROS	1	0.08	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
FEDERAL TELEPHONE DIRECTORY	1	0.08	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00
FEDEX	5	0.39	0	0.00	0	0.00	3	60.00	2	40.00	0	0.00
FIRE BASE	1	0.08	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
FISH & WILDLIFE SURVEY	7	0.55	0	0.00	0	0.00	3	42.86	2	28.57	0	0.00
FLITE	4	0.32	0	0.00	0	0.00	0	0.00	4	100.00	0	0.00
GAO	2	0.16	0	0.00	2	100.00	0	0.00	0	0.00	0	0.00
HANES	1	0.08	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00
INDEX MEDICUS	1	0.08	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
IRS	7	0.55	0	0.00	0	0.00	4	57.14	3	42.86	0	0.00
JURIS	2	0.16	0	0.00	0	0.00	0	0.00	1	50.00	1	50.00
LEGIS	6	0.47	1	16.67	1	16.67	0	0.00	4	66.67	0	0.00
MEDLARS	5	0.39	5	100.00	0	0.00	0	0.00	0	0.00	0	0.00
MENTAL HEALTH	4	0.32	0	0.00	0	0.00	4	100.00	0	0.00	0	0.00
NASA RECON	13	1.02	10	76.92	1	7.69	0	0.00	2	15.38	0	0.00
NATIONAL REFERRAL CENTER	3	0.24	0	0.00	3	100.00	0	0.00	0	0.00	0	0.00
NEWS SEARCH INDEX	2	0.16	0	0.00	0	0.00	2	100.00	0	0.00	0	0.00
NLRB DECISIONS	4	0.32	0	0.00	0	0.00	4	100.00	0	0.00	0	0.00
NOAA	1	0.08	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
NUCLEAR SCIENCE	1	0.08	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
OSHA	7	0.55	0	0.00	0	0.00	6	85.71	0	0.00	0	0.00

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F -- METHODS OF SEARCHING OTHER GOVERNMENT RESEARCH PUBLICATONS
ALPHABETICALLY BY PUBLICATION - Continued

PUBLICATION	TOTAL FOR PUBLICATION*		ELECTRONIC FORMAT NOW						ELECTRONIC FORMAT IN FUTURE			
			GOV'T DIRECT		IN-HOUSE		COMMER VENDOR		CURRENT NEED		FUTURE NEED	
	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT
PATENTS	17	1.34	6	35.29	0	0.00	10	58.82	1	5.88	0	0.00
PDQ DIRECTORY	3	0.24	3	100.00	0	0.00	0	0.00	0	0.00	0	0.00
PERSONNEL	2	0.16	0	0.00	0	0.00	0	0.00	2	100.00	0	0.00
PRODUCER PRICE	[illegible]	0.08	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00
PUBLIC SCHOOL DIRECTORY	3	0.24	0	0.00	0	0.00	3	100.00	0	0.00	0	0.00
RTCS	1	0.08	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00
SCAN	1	0.08	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
SCORPIO	6	0.47	1	16.67	0	0.00	0	0.00	5	83.33	0	0.00
SOCIAL SECURITY MANUAL	1	0.08	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00
STAR	6	0.47	0	0.00	0	0.00	3	50.00	2	33.33	0	0.00
SUPREME COURT	1	0.08	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00
TAX COURT	4	0.32	0	0.00	0	0.00	2	50.00	0	0.00	2	50.00
TRADEMARKS	1	0.08	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00
TREATIES	4	0.32	0	0.00	0	0.00	0	0.00	4	100.00	0	0.00
U.S. REPORTS	10	0.79	0	0.00	0	0.00	6	60.00	3	30.00	1	10.00
USGS	1	0.08	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00

*Total count and percent is based on the 1291 libraries returning questionnaires that indicated that they searched the publication either in paper or microfiche, in electronic format, or had a need for the publication in electronic format. All other percentages are based on the total count for libraries searching that publication.

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F -- QUESTION 1 -- METHODS OF SEARCHING OTHER GOVERNMENT RESEARCH PUBLICATIONS

DESCENDING IN ORDER OF OCCURRENCE

PUBLICATION	TOTAL FOR PUBLICATIONS		PAPER OR MICROFICHE	
	COUNT	PERCENT	COUNT	PERCENT
CONGRESSIONAL RECORD.	25	1.97	23	92.00
CENSUS.	19	1.50	16	84.21
PATENTS	17	1.34	10	58.82
NASA RECON.	13	1.02	9	69.23
U.S. REPORTS.	10	0.79	10	100.00
FISH & WILDLIFE SURVEY.	7	0.55	3	42.86
IRS	7	0.55	7	100.00
OSHA.	7	0.55	6	85.71
LEGIS	6	0.47	0	0.00
SCORPIO	6	0.47	0	0.00
STAR.	6	0.47	6	100.00
FEDEX	5	0.39	3	60.00
MEDLARS	5	0.39	0	0.00
DROLS/DTIC.	4	0.32	2	50.00
FLITE	4	0.32	2	50.00
MENTAL HEALTH	4	0.32	1	25.00
NLRB DECISIONS.	4	0.32	4	100.00
TAX COURT	4	0.32	4	100.00
TREATIES.	4	0.32	3	75.00
CONGRESSIONAL RECORD INDEX.	3	0.24	3	100.00
EPILEPSYLINE.	3	0.24	0	0.00
NATIONAL REFERRAL CENTER.	3	0.24	0	0.00
PDQ DIRECTORY	3	0.24	0	0.00
PUBLIC SCHOOL DIRECTORY	3	0.24	1	33.33
ASI	2	0.16	2	100.00
BILLS	2	0.16	2	100.00
CAB	2	0.16	2	100.00
CIS	2	0.16	2	100.00
CONGRESSIONAL DIRECTORY	2	0.16	1	50.00
GAO	2	0.16	0	0.00
JURIS	2	0.16	0	0.00
NEWS SEARCH INDEX	2	0.16	0	0.00
PERSONNEL	2	0.16	0	0.00
BILINGUAL EDUCATION	1	0.08	0	0.00
CLSI.	1	0.08	0	0.00
CONGRESSIONAL DOCUMENTS	1	0.08	1	100.00
CONGRESSIONAL HEARINGS.	1	0.08	1	100.00
CONGRESSIONAL REPORTS	1	0.08	1	100.00
DOMESTIC ASSISTANCE	1	0.08	1	100.00
DRUG CODE DIRECTORY	1	0.08	1	100.00

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F -- QUESTION 1 -- METHODS OF SEARCHING OTHER GOVERNMENT RESEARCH PUBLICATIONS
DESCENDING IN ORDER OF OCCURRENCE - Continued

PUBLICATION	TOTAL FOR PUBLICATION*		PAPER OR MICROFICHE	
	COUNT	PERCENT	COUNT	PERCENT
ECER.	1	0.08	0	0.00
EELS.	1	0.08	0	0.00
EROS.	1	0.08	1	100.00
FEDERAL TELEPHONE DIRECTORY	1	0.08	1	100.00
FIRE BASE	1	0.08	0	0.00
HANES	1	0.08	1	100.00
INDEX MEDICUS	1	0.08	1	100.00
NOAA.	1	0.08	0	0.00
NUCLEAR SCIENCE	1	0.08	1	100.00
PRODUCER PRICE.	1	0.08	1	100.00
RTCS.	1	0.08	1	100.00
SCAN.	1	0.08	1	100.00
SOCIAL SECURITY MANUAL.	1	0.08	0	0.00
SUPREME COURT	1	0.08	1	100.00
TRADEMARKS.	1	0.08	1	100.00
USGS.	1	0.08	1	100.00

*Total count and percent is based on 1291 libraries returning questionnaires that indicated that they searched the publication either on paper or microfiche, in electronic format, or had a need for the publication in electronic format. All other percentages are based on the total count for libraries searching that publication.

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F -- METHODS OF SEARCHING OTHER GOVERNMENT RESEARCH PUBLICATONS
DESCENDING IN ORDER OF OCCURRENCE

	TOTAL FOR PUBLICATION*		ELECTRONIC FORMAT NOW						ELECTRONIC FORMAT IN FUTURE			
			GOV'T DIRECT		IN-HOUSE		COMMER VENDOR		CURRENT NEED		FUTURE NEED	
PUBLICATION	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT
CONGRESSIONAL RECORD.	25	1.97	0	0.00	0	0.00	4	16.00	12	48.00	3	12.00
CENSUS.	19	1.50	0	0.00	3	15.79	2	10.53	9	47.37	5	26.32
PATENTS	17	1.34	6	35.29	0	0.00	10	58.82	1	5.88	0	0.00
NASA RECON.	13	1.02	10	76.92	1	7.69	0	0.00	2	15.38	0	0.00
U.S. REPORTS.	10	0.79	0	0.00	0	0.00	6	60.00	3	30.00	1	10.00
FISH & WILDLIFE SURVEY.	7	0.55	0	0.00	0	0.00	3	42.86	2	28.57	0	0.00
IRS	7	0.55	0	0.00	0	0.00	4	57.14	3	42.86	0	0.00
OSHA.	7	0.55	0	0.00	0	0.00	6	85.71	0	0.00	0	0.00
LEGIS	6	0.47	1	16.67	1	16.67	0	0.00	4	66.67	0	0.00
SCORPIO	6	0.47	1	16.67	0	0.00	0	0.00	5	83.33	0	0.00
STAR.	6	0.47	0	0.00	0	0.00	3	50.00	2	33.33	0	0.00
FEDEX	5	0.39	0	0.00	0	0.00	3	60.00	2	40.00	0	0.00
MEDLARS	5	0.39	5	100.00	0	0.00	0	0.00	0	0.00	0	0.00
DROLS/DTIC.	4	0.32	4	100.00	0	0.00	0	0.00	0	0.00	0	0.00
FLITE	4	0.32	0	0.00	0	0.00	0	0.00	4	100.00	0	0.00
MENTAL HEALTH	4	0.32	0	0.00	0	0.00	4	100.00	0	0.00	0	0.00
NLRB DECISIONS.	4	0.32	0	0.00	0	0.00	4	100.00	0	0.00	0	0.00
TAX COURT	4	0.32	0	0.00	0	0.00	2	50.00	0	0.00	2	50.00
TREATIES.	4	0.32	0	0.00	0	0.00	0	0.00	4	100.00	0	0.00
CONGRESS RECORD INDEX	3	0.24	0	0.00	0	0.00	0	100.00	3	100.00	0	0.00
EPILEPSYLINE.	3	0.24	0	0.00	0	0.00	3	100.00	0	0.00	0	0.00
NATIONAL REFERRAL CENTER. . . .	3	0.24	0	0.00	3	100.00	0	0.00	0	0.00	0	0.00
PDQ DIRECTORY	3	0.24	3	100.00	0	0.00	0	0.00	0	0.00	0	0.00
PUBLIC SCHOOL DIRECTORY	3	0.24	0	0.00	0	0.00	3	100.00	0	0.00	0	0.00
ASI	2	0.16	0	0.00	0	0.00	2	100.00	0	0.00	0	0.00
BILLS	2	0.16	0	0.00	0	0.00	0	0.00	1	50.00	0	0.00
CAB	2	0.16	0	0.00	0	0.00	0	0.00	2	100.00	0	0.00
CIS	2	0.16	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
CONGRESS DIRECTORY.	2	0.16	0	0.00	0	0.00	0	0.00	1	50.00	0	0.00
GAO	2	0.16	0	0.00	2	100.00	0	0.00	0	0.00	0	0.00
JURIS	2	0.16	0	0.00	0	0.00	0	0.00	1	50.00	1	50.00
NEWS SEARCH INDEX	2	0.16	0	0.00	0	0.00	2	100.00	0	0.00	0	0.00
PERSONNEL	2	0.16	0	0.00	0	0.00	0	0.00	2	100.00	0	0.00
BILLINGUAL EDUCATION.	1	0.08	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00
CLIS.	1	0.08	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00
CONGRESS DOCUMENTS.	1	0.08	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
CONGRESS HEAR	1	0.08	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
CONGRESS REPORTS.	1	0.08	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
DOMESTIC ASSISTANCE	1	0.08	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00
DRUG CODE DIRECTORY	1	0.08	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F -- METHODS OF SEARCHING OTHER GOVERNMENT RESEARCH PUBLICATONS DESCENDING IN ORDER OF OCCURRENCE - Continued

PUBLICATION	TOTAL FOR PUBLICATION*		ELECTRONIC FORMAT NOW						ELECTRONIC FORMAT IN FUTURE			
			GOV'T DIRECT		IN-HOUSE		COMMER VENDOR		CURRENT NEED		FUTURE NEED	
	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT
ECER	1	0.08	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00
EELS	1	0.08	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00
EROS	1	0.08	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
FEDERAL TELEPHONE DIRECTORY	1	0.08	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00
FIRE BASE	1	0.08	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
HANES	1	0.08	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00
INDEX MEDICUS	1	0.08	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
NOAA	1	0.08	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
NUCLEAR SCIENCE	1	0.08	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
PRODUCER PRICE	1	0.08	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00
RTCS	1	0.08	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00
SCAN	1	0.08	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
SOCIAL SECURITY MANUAL	1	0.08	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00
SUPREME COURT	1	0.08	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00
TRADEMARKS	1	0.08	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00
USGS	1	0.08	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00

*Total count and percent is based on the 1291 libraries returning questionnaires that indicated that they searched the publication either in paper or microfiche, in electronic format, or had a need for the publication in electronic format. All other percentages are based on the total count for libraries searching that publication.

JOINT COMMITTEE ON PRINTING -- QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F. -- QUESTION 2 WITH PART A -- QUESTIONS 6 AND 7

WHETHER THERE IS A CENTER THAT ACQUIRES GOVERNMENT DATA IN MACHINE READABLE FORM AND MAKES IT AVAILABLE TO PATRONS TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

	IS THERE A CTR. AT YOUR INSTITUTION						ALL LIBRARIES	
	YES		NO		DO NOT KNOW			
TYPE OF LIBRARY	N	%	N	%	N	%	N	%
ACADEMIC	151	20.9	501	69.5	69	9.6	721	100.0
COURT.	0	0	47	85.5	8	14.5	55	100.0
FEDRAL AGENCY. . .	8	20.0	24	60.0	8	20.0	40	100.0
LAW SCHOOL	20	14.8	87	64.4	28	20.7	135	100.0
PUBLIC	11	4.1	246	92.1	10	3.7	267	100.0
STATE AGENCY . . .	10	22.2	32	71.1	3	6.7	45	100.0
OTHER.	3	10.7	21	75.0	4	14.3	28	100.0
TYPE OF DEPOSITORY								
REGIONAL	20	39.2	23	45.1	8	15.7	51	100.0
SELECTIVE.	183	14.8	935	75.4	122	9.8	1240	100.0
TYPE OF INSTITUTION								
LAND GRANT	27	47.7	20	35.1	10	17.5	57	100.0
NON-LAND GRANT . .	176	14.3	938	76.0	120	9.7	1234	100.0
TOTALS: ALL TYPES OF LIBRARIES TOGETHER	203	15.7	958	74.2	130	10.1	1291	100.0

JOINT COMMITTEE ON PRINTING -- QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F -- QUESTION 2

QUESTIONS CONCERNING THE ACQUISITION OF FEDERAL GOVERNMENT DATA, ELIMINATING LIBRARIES WHICH DO NOT HAVE CENTERS

TAPES ACQUIRED BY	NUMBER	PERCENT
LIBRARY.	34	16.75
COMPUTER CENTER.	76	37.44
OTHER.	89	43.84
NO RESPONSE.	4	1.97
TOTALS	203	100.00

TAPES ACQUIRED FROM	NUMBER	PERCENT
FEDERAL AGENCY	127	62.56
COMMERCIAL SOURCE.	21	10.35
ACADEMIC/NONPROFIT DATA ARCHIVE.	65	32.02
OTHER	30	14.78
TOTALS*.	243	119.61

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*Some libraries receive tapes from more than one source.

JOINT COMMITTEE ON PRINTING -- QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART F -- QUESTION 2

QUESTIONS CONCERNING THE ACQUISITION OF FEDERAL GOVERNMENT DATA, ELIMINATING LIBRARIES THAT DO NOT HAVE CENTERS

REGIONAL LIBRARIES ONLY

TAPES ACQUIRED BY	NUMBER	PERCENT
LIBRARY.	2	10.
COMPUTER CENTER.	8	40.
OTHER.	10	50.
TOTALS	20	100.00

TAPES ACQUIRED FROM	NUMBER	PERCENT
FEDERAL AGENCY	13	65.
COMMERCIAL SOURCE.	3	15.
ACADEMIC/NONPROFIT DATA ARCHIVE.	5	25.
OTHER	3	15.
TOTALS*.	24	100.00

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*Some libraries receive tapes from more than one source.

JOINT COMMITTEE ON PRINTING
QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART G. -- QUESTION 4 WITH PART A -- QUESTIONS 6 AND 7

WHETHER LIBRARIES WOULD PREFER GOVERNMENT DOCUMENTS IN A FORMAT OTHER THAN PAPER AND MICROFICHE
TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

TYPE OF LIBRARY	PREFER GOVT. DOCS. IN DIFFERENT FORMAT?						ALL LIBRARIES	
	YES		NO		NO RESPONSE			
	N	%	N	%	N	%	N	%
ACADEMIC.	165	22.9	387	53.7	169	23.4	721	100.0
COURT	8	14.5	23	41.8	24	43.6	55	100.0
FEDERAL AGENCY. .	12	30.0	18	45.0	10	25.0	40	100.0
LAW SCHOOL. . . .	42	31.1	57	42.2	36	26.7	135	100.0
PUBLIC.	55	20.6	139	52.1	73	27.3	267	100.0
STATE AGENCY. . .	8	17.8	27	60.0	10	22.2	45	100.0
OTHER	5	17.9	14	50.0	9	32.1	28	100.0
TYPE OF DEPOSITORY								
REGIONAL.	15	29.4	23	45.1	13	25.5	51	100.0
SELECTIVE	280	22.6	642	51.8	318	25.6	1240	100.0
TYPE OF INSTITUTION								
LAND GRANT. . . .	20	35.1	24	42.1	13	22.8	57	100.0
NON-LAND GRANT. .	275	22.3	641	51.9	318	25.8	1234	100.0
TOTALS	295	22.9	665	51.5	331	25.6	1291	100.0

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART G - QUESTIONS 1 THROUGH 3 WITH PART A -- QUESTIONS 6 AND 7

COMPUTER MAKES AND LOCATION

TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

QUESTION 1. MAINFRAMES

	LIBRARIES WITH MAINFRAMES		LOCATION OF COMPUTER						TOTAL FOR ALL LIBRARIES RESPONDING	
			PARENT INSTITUTION		LIBRARY OTHER#		GOV'T DOCUMENT DEPARTMENT			
TYPE OF LIBRARY:	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
ACADEMIC	331	45.9	309	42.9	27	3.7	3	0.4	721	100.0
COURT.	3	5.5	2	3.6	1	1.8	0	0.0	55	100.0
FEDERAL AGENCY	9	22.5	5	12.5	3	7.5	0	0.0	40	100.0
LAW SCHOOL	31	23.0	29	21.5	1	0.7	0	0.0	135	100.0
PUBLIC	30	11.2	24	9.0	7	2.6	1	0.4	267	100.0
STATE AGENCY	9	20.0	6	13.3	0	0.0	0	0.0	45	100.0
OTHER.	4	14.3	3	10.7	0	0.0	0	0.0	28	100.0
TYPE OF DEPOSITORY:										
REGIONAL	27	52.9	22	43.1	1	2.0	0	0.0	51	100.0
SELECTIVE.	390	31.5	356	28.7	38	3.1	4	0.3	1240	100.0
TYPE OF INSTITUTION:										
LAND GRANT	36	63.2	33	57.9	4	7.0	0	0.0	57	100.0
NON-LAND GRANT	381	30.9	345	28.0	35	2.8	4	0.3	1234	100.0
TOTALS	417	32.3	378	29.3	39	3.0	4	0.3	1291	100.0

#Area other than Government Documents Department.

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART G -- QUESTIONS 1 THROUGH 3 WITH PART A -- QUESTIONS 6 AND 7

COMPUTER MAKES AND LOCATION

TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

QUESTION 2. MINICOMPUTERS

	LIBRARIES WITH MINICOMPUTERS		LOCATION OF COMPUTER						TOTAL FOR ALL LIBRARIES RESPONDING	
			PARENT INSTITUTION		LIBRARY OTHER#		GOV'T DOCUMENT DEPARTMENT			
TYPE OF LIBRARY:	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
ACADEMIC	218	30.2	134	18.6	90	12.5	0	0.0	721	100.0
COURT.	6	10.9	4	7.3	2	3.6	0	0.0	55	100.0
FEDERAL AGENCY	8	20.0	4	10.0	2	5.0	0	0.0	40	100.0
LAW SCHOOL	13	9.6	7	5.2	4	3.0	0	0.0	135	100.0
PUBLIC	64	24.0	31	11.6	37	13.9	0	0.0	267	100.0
STATE AGENCY	8	17.8	4	8.9	4	8.9	0	0.0	45	100.0
OTHER.	5	17.9	2	7.1	2	7.1	1	3.6	28	100.0
TYPE OF DEPOSITORY:										
REGIONAL	17	33.3	9	17.6	9	17.6	0	0.0	51	100.0
SELECTIVE.	305	24.6	177	14.3	132	10.6	1	0.1	1240	100.0
TYPE OF INSTITUTION:										
LAND GRANT	19	33.3	8	14.0	11	19.3	0	0.0	57	100.0
NON-LAND GRANT	303	24.6	178	14.4	130	10.5	1	0.1	1234	100.0
TOTALS	322	24.9	186	14.4	141	10.9	1	0.1	1291	100.0

#AREA OTHER THAN GOVERNMENT DOCUMENTS DEPARTMENT.

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART G -- QUESTIONS 1 THROUGH 3 WITH PART A -- QUESTIONS 6 AND 7

COMPUTER MAKES AND LOCATION

TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

QUESTION 3. MICROCOMPUTERS

	LIBRARIES WITH MICROCOMPUTERS		LOCATION OF COMPUTER						TOTAL FOR ALL LIBRARIES RESPONDING	
			PARENT INSTITUTION		LIBRARY OTHER#		GOV'T DOCUMENT DEPARTMENT			
TYPE OF LIBRARY:	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
ACADEMIC	327	45.4	95	13.2	243	33.7	12	1.7	721	100.0
COURT.	3	5.5	0	0.0	3	5.5	0	0.0	55	100.0
FEDERAL AGENCY	6	15.0	3	7.5	5	12.5	0	0.0	40	100.0
LAW SCHOOL	41	30.4	5	3.7	30	22.2	0	0.0	135	100.0
PUBLIC	117	43.8	40	15.0	82	30.7	8	3.0	267	100.0
STATE AGENCY	24	53.3	7	15.6	19	42.2	0	0.0	45	100.0
OTHER.	12	42.9	2	7.1	10	35.7	1	3.6	28	100.0
TYPE OF DEPOSITORY:										
REGIONAL	30	58.8	6	11.8	24	47.1	2	3.9	51	100.0
SELECTIVE.	500	40.3	146	11.8	368	29.7	19	1.5	1240	100.0
TYPE OF INSTITUTION:										
LAND GRANT	31	54.4	6	10.5	26	45.6	3	5.3	57	100.0
NON-LAND GRANT	499	40.4	146	11.8	366	29.7	18	1.5	1234	100.0
TOTALS	530	41.1	152	11.8	392	30.4	21	1.6	1291	100.0

#AREA OTHER THAN GOVERNMENT DOCUMENTS DEPARTMENT.

JOINT COMMITTEE ON PRINTING -- QUESTIONNAIRE TO DEPOSITORY LIBRARIES
PART G -- QUESTION 4 WITH PART A -- QUESTIONS 6, 7, AND 8

WHETHER THE LIBRARY WOULD PREFER GOVERNMENT DOCUMENT IN A FORMAT OTHER THAN PAPER AND MICROFICHE TABULATED BY TYPES OF LIBRARIES, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS, AND NUMBER OF VOLUMES

FREQUENCIES COUNTS ONLY

	NUMBER OF VOLUMES IN LIBRARY																					ALL LIBRARIES RESPONSE		
	LESS THAN 50,000			50,000-99,999			100,000-199,999			200,000-499,999			500,000-999,999			1 TO 4 MILLION			4 MILLION OR MORE					
	RESPONSE			RESPONSE			RESPONSE			RESPONSE			RESPONSE			RESPONSE			RESPONSE			RESPONSE		
	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR
TYPE OF LIBRARY	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM	NUM
ACADEMIC	5	17	9	8	38	14	21	84	37	46	112	53	32	73	21	45	56	24	8	7	11	165	387	169
COURT.	2	3	11	0	15	7	3	4	6	3	1	0	0	0	0	0	0	0	0	0	0	8	23	24
FEDERAL AGENCY	1	7	6	1	4	0	3	4	2	1	2	1	2	1	0	3	0	1	1	0	0	12	18	10
LAW SCHOOL	0	1	1	3	3	1	18	29	12	18	19	20	3	4	2	0	1	0	0	0	0	42	57	36
PUBLIC	1	4	3	3	8	6	4	39	22	18	38	20	6	23	11	9	24	8	14	3	3	55	139	73
STATE AGENCY	0	2	0	2	0	2	0	3	2	2	11	2	1	3	2	3	8	1	0	0	1	8	27	10
OTHER.	0	2	1	1	2	4	1	3	1	2	4	2	0	3	1	1	0	0	0	0	0	5	14	9
TYPE OF DEPOSITORY																								
REGIONAL	0	0	0	0	0	1	0	0	0	1	1	2	4	4	1	8	17	5	2	1	4	15	23	13
SELECTIVE.	9	36	31	18	70	33	50	166	82	89	186	96	40	103	36	53	72	29	21	9	11	280	642	318
TYPE OF INSTITUTION																								
LAND GRANT	0	0	0	0	0	1	1	1	0	3	5	1	3	3	1	11	12	4	2	3	6	20	24	13
NON-LAND GRANT	9	36	31	18	70	33	49	165	82	87	182	97	41	104	36	50	77	30	21	7	9	275	641	318
TOTALS	9	36	31	18	70	34	50	166	82	90	187	98	44	107	37	61	89	34	23	10	15	295	665	331

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART G -- QUESTION 4 WITH PART A -- QUESTIONS 6, 7, AND 8

WHETHER THE LIBRARY WOULD PREFER GOVERNMENT DOCUMENT IN A FORMAT OTHER THAN PAPER AND MICROFICHE TABULATED BY TYPES OF LIBRARIES, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS, AND NUMBER OF VOLUMES

PERCENTAGES ONLY

	NUMBER OF VOLUMES IN LIBRARY																					ALL LIBRARIES RESPONDING		
	LESS THAN 50,000			50,000-99,999			100,000-199,999			200,000-499,999			500,000-999,999			1 TO 4 MILLION			4 MILLION & MORE					
	RESPONSE			RESPONSE			RESPONSE			RESPONSE			RESPONSE			RESPONSE			RESPONSE			RESPONSE		
	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR
CATEGORY OF LIBRARY	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT
ACADEMIC	16	55	29	13	63	23	15	59	26	22	53	25	25	58	17	36	45	19	31	27	42	23	54	23
COURT.	13	19	69	0	68	32	23	31	46	75	25	0	0	0	0	0	0	0	0	0	0	15	42	44
FEDERAL AGENCY	7	50	43	20	80	0	33	44	22	25	50	25	67	33	0	75	0	25	100	0	0	30	45	25
LAW SCHOOL	0	50	50	43	43	14	31	49	20	32	33	35	33	44	22	0	100	0	0	0	0	31	42	27
PUBLIC	13	50	38	18	47	35	6	60	34	24	50	26	15	57	27	22	59	20	70	15	15	21	52	27
STATE AGENCY	0	100	0	50	0	50	0	60	40	13	73	13	17	50	33	25	67	8	0	0	100	18	60	22
OTHER.	0	67	33	14	29	57	20	60	20	25	50	25	0	75	25	100	0	0	0	0	0	18	50	32
TYPE OF DEPOSITORY:																								
REGIONAL	0	0	0	0	0	100	0	0	0	25	25	50	44	44	11	27	57	17	29	14	57	29	45	25
SELECTIVE.	12	47	41	15	58	27	17	56	28	24	50	26	22	58	20	34	47	19	51	22	27	23	52	26
TYPE OF INSTITUTION:																								
LAND GRANT	0	0	0	0	0	100	50	50	0	33	56	11	43	43	14	41	44	15	18	27	55	35	42	23
NON-LAND GRANT	12	47	41	15	58	27	17	56	28	24	50	27	23	57	20	32	49	19	57	19	24	22	52	26
TOTALS	12	47	41	15	57	28	17	56	28	24	50	26	23	57	20	33	48	18	48	21	31	23	52	26

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART G -- QUESTION 4 WITH PART A -- QUESTIONS 6 AND 7

PREFERRED FORMATS FOR DELIVERY OF GOVERNMENT DOCUMENTS

TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

	PREFERRED FORMAT														TOTAL # OF LIBRARIES	
	ON-LINE		FLOPPY DISC		HARD DISC		MAG. TAPE		OPT. DISC		VIDEO DISC		OTHER			
TYPE OF LIBRARY	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ACADEMIC	124	75.2	72	43.6	21	12.7	41	24.8	32	19.4	32	19.4	2	1.2	165	100.0
COURT	7	87.5	4	50.0	0	0.0	1	12.5	0	0.0	0	0.0	0	0.0	8	100.0
FEDERAL AGENCY	8	66.7	3	25.0	1	8.3	1	8.3	4	33.3	1	8.3	0	0.0	12	100.0
LAW SCHOOL	33	78.6	18	42.9	2	4.8	4	9.5	8	19.0	6	14.3	0	0.0	42	100.0
PUBLIC	43	78.2	19	34.5	4	7.3	5	9.1	4	7.3	5	9.1	0	0.0	55	100.0
STATE AGENCY	7	87.5	5	62.5	4	50.0	1	12.5	4	50.0	3	37.5	0	0.0	8	100.0
TYPE OF DEPOSITORY																
REGIONAL	9	60.0	7	46.7	3	20.0	2	13.3	7	46.7	6	40.0	0	0.0	15	100.0
SELECTIVE	218	77.9	116	41.4	30	10.7	54	19.3	48	17.1	41	14.6	2	0.7	280	100.0
TYPE OF INSTITUTION																
LAND GRANT	14	70.0	7	35.0	4	20.0	4	20.0	8	40.0	6	30.0	0	0.0	20	100.0
NON-LAND GRANT	213	77.5	116	42.2	29	10.5	52	18.9	47	17.1	41	14.9	2	0.7	275	100.0
TOTALS	227	76.9	123	41.7	33	11.2	56	19.0	55	18.6	47	15.9	2	0.7	295	100.0

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART G -- QUESTION 5 WITH PART A -- QUESTIONS 6 AND 7

THE NUMBER OF TERMINALS AT THE LIBRARY FOR ACCESSING IN-HOUSE AND OR OUT-OF-HOUSE DATA BASES TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

	NUMBER OF DATA BASE TERMINALS IN LIBRARY																						All LI-BRARIES	
	NONE		1		2		3		4		5-7		8-12		13-20		21-50		51-100		OVER100			
TYPE OF LIBRARY	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ACADEMIC.	128	18	99	14	110	15	67	9	50	7	75	10	64	9	55	8	59	8	11	2	3	0	721	100
COURT	27	49	15	27	9	16	2	4	0	0	2	4	0	0	0	0	0	0	0	0	0	0	55	100
FEDERAL AGENCY. . . .	8	20	8	20	3	7	7	17	2	5	5	13	5	13	0	0	2	5	0	0	0	0	40	100
LAW SCHOOL.	22	16	14	10	16	12	27	20	22	16	21	16	8	6	3	2	1	1	1	1	0	0	135	100
PUBLIC	83	31	41	15	23	9	21	8	13	5	19	7	11	4	23	9	20	7	11	4	2	1	267	100
STATE AGENCY.	1	2	3	7	3	7	5	11	7	16	14	31	2	4	5	11	5	11	0	0	0	0	45	100
OTHER	7	25	6	21	2	7	4	14	2	7	1	4	3	11	2	7	0	0	0	0	1	4	28	100
TYPE OF DEPOSITORY																								
REGIONAL.	4	8	1	2	3	6	3	6	2	4	12	24	2	4	10	20	11	22	2	4	1	2	51	100
SELECTIVE	272	22	185	15	163	13	130	10	94	8	125	10	91	7	78	6	76	6	21	2	5	0	1240	100
TYPE OF INSTITUTION																								
LAND GRANT.	8	14	3	5	3	5	2	4	1	2	8	14	9	16	8	14	9	16	5	9	1	2	57	100
NON-LAND GRANT. . . .	268	22	183	15	163	13	131	11	95	8	129	10	84	7	80	6	78	6	18	1	5	0	1234	100
TOTALS.	276	21	186	14	166	13	133	10	96	7	137	11	93	7	88	7	87	7	23	2	6	0	1291	100

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART G -- QUESTION 5 -- NUMBER 1 WITH PART A -- QUESTIONS 6, 7, AND 8

DOES LIBRARY HAVE TERMINALS TO ACCESS DATA BASES
TABULATED BY TYPES OF LIBRARIES, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS, AND NUMBER OF VOLUMES
FREQUENCIES COUNTS ONLY

	NUMBER OF VOLUMES IN LIBRARY																					ALL LIBRARIES RESPONDING		
	LESS THAN 50,000			50,000-99,999			100,000-199,999			200,000-499,999			500,000-999,999			1 TO 4 MILLION			4 MILLION & MORE					
	RESPONSE			RESPONSE			RESPONSE			RESPONSE			RESPONSE			RESPONSE			RESPONSE			RESPONSE		
	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR
TYPE OF LIBRARY:	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ACADEMIC	13	17	1	32	25	3	109	27	6	191	14	6	119	5	2	119	0	6	23	0	3	606	88	27
COURT.	6	8	2	13	8	1	9	3	1	3	1	0	0	0	0	0	0	0	0	0	0	31	20	4
FEDERAL AGENCY	10	4	0	4	0	1	8	0	1	4	0	0	3	0	0	4	0	0	1	0	0	34	4	2
LAW SCHOOL	1	1	0	6	1	0	50	6	3	53	3	1	9	0	0	1	0	0	0	0	0	120	11	4
PUBLIC	3	5	0	9	7	1	30	31	4	57	18	1	32	7	1	37	3	1	18	0	2	186	71	10
STATE AGENCY	1	0	1	4	0	0	4	1	0	15	0	0	6	0	0	12	0	0	1	0	0	43	1	1
OTHER.	1	2	0	5	2	0	5	0	0	5	3	0	4	0	0	1	0	0	0	0	0	21	7	0
TYPE OF DEPOSITORY:																								
REGIONAL	0	0	0	1	0	0	0	0	0	4	0	0	9	0	0	28	0	2	7	0	0	49	0	2
SELECTIVE.	35	37	4	72	43	6	215	68	15	324	39	8	164	12	3	146	3	5	36	0	5	992	202	46
TYPE OF INSTITUTION:																								
LAND GRANT	0	0	0	1	0	0	0	2	0	7	2	0	7	0	0	26	0	1	10	0	1	51	4	2
NON-LAND GRANT	35	37	4	72	43	6	215	66	15	321	37	8	166	12	3	148	3	6	33	0	4	990	198	46
TOTALS	35	37	4	73	43	6	215	68	15	328	39	8	173	12	3	174	3	7	43	0	5	1041	202	48

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART G -- QUESTION 5 -- NUMBER 1 WITH PART A -- QUESTIONS 6, 7, AND 8

DOES LIBRARY HAVE TERMINALS TO ACCESS DATA BASES
TABULATED BY TYPES OF LIBRARIES, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS, AND NUMBER OF VOLUMES

PERCENTAGES ONLY

	NUMBER OF VOLUMES IN LIBRARY																					ALL LIBRARIES RESPONDING		
	LESS THAN 50,000			50,000-99,999			100,000-199,999			200,000-499,999			500,000-999,999			1 TO 4 MILLION			4 MILLION & MORE					
	RESPONSE			RESPONSE			RESPONSE			RESPONSE			RESPONSE			RESPONSE			RESPONSE			RESPONSE		
	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR	YES	NO	NR
TYPE OF LIBRARY	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT	PCT
ACADEMIC	42	55	3	53	42	5	77	19	4	91	7	3	94	4	2	95	0	5	88	0	12	84	12	4
COURT.	38	50	13	59	36	5	69	23	8	75	25	0	0	0	0	0	0	0	0	0	0	56	36	7
FEDERAL AGENCY	71	29	0	80	0	20	89	0	11	100	0	0	100	0	0	100	0	0	100	0	0	85	10	5
LAW SCHOOL	50	50	0	86	14	0	85	10	5	93	5	2	100	0	0	100	0	0	0	0	0	89	8	3
PUBLIC	38	63	0	53	41	6	46	48	6	75	24	1	80	17	2	90	7	2	90	0	10	70	27	4
STATE AGENCY	50	0	50	100	0	0	80	20	0	100	0	0	100	0	0	100	0	0	100	0	0	96	2	2
OTHER.	33	67	0	71	29	0	100	0	0	63	38	0	100	0	0	100	0	0	0	0	0	75	25	0
TYPE OF DEPOSITORY:																								
REGIONAL	0	0	0	100	0	0	0	0	0	100	0	0	100	0	0	93	0	7	100	0	0	96	0	4
SELECTIVE.	46	49	5	60	36	5	72	23	5	87	11	2	92	7	2	95	2	3	88	0	12	80	16	4
TYPE OF INSTITUTION:																								
LAND GRANT	0	0	0	100	0	0	0	100	0	78	22	0	100	0	0	96	0	4	91	0	9	89	7	4
NON-LAND GRANT	46	49	5	60	36	5	73	22	5	88	10	2	92	7	2	94	2	4	89	0	11	80	16	4
TOTALS	46	49	5	60	35	5	72	23	5	87	10	2	92	6	2	95	2	4	90	0	10	81	16	4

JOINT COMMITTEE ON PRINTING - QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART G -- QUESTION 5 -- NUMBER 2 WITH PART A -- QUESTIONS 6 AND 7

INFORMATION ON TERMINALS LOCATION AND USERS
TABULATED BY TYPES OF LIBRARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

			COMPUTERS ACCESSED				TERMINAL LOCATION			TERMINAL USERS			
			IN-HOUSE										
TYPE OF LIBRARY	TOTAL # OF LIBRARIES		MAIN	MINI	MICRO	OUT-OF HOUSE	PARENT INSTIT	LIB. & OTHER	GOV'T DOCDEP	ADMIN	REF.	GOV'T DOC.D.	TECH. PROC.
ACADEMIC.	COUNT	721	197	117	59	547	68	547	83	224	516	327	483
	PERCENT	100.0	27.3	16.2	8.2	75.9	9.4	75.9	11.5	31.1	71.6	45.4	67.0
COURT	COUNT	55	3	2	0	26	1	26	1	11	25	16	14
	PERCENT	100.0	5.5	3.6	0.0	47.3	1.8	47.3	1.8	20.0	45.5	29.1	25.5
FEDERAL AGENCY.	COUNT	40	11	5	1	30	2	24	1	6	22	9	22
	PERCENT	100.0	27.5	12.5	2.5	75.0	5.0	60.0	2.5	15.0	55.0	22.5	55.0
LAW SCHOOL.	COUNT	135	20	6	20	102	16	101	7	59	102	70	97
	PERCENT	100.0	14.8	4.4	14.8	75.6	11.9	74.8	5.2	43.7	75.6	51.9	71.9
PUBLIC.	COUNT	267	19	45	36	157	53	145	17	74	129	71	138
	PERCENT	100.0	7.1	16.9	13.5	58.8	19.9	54.3	6.4	27.7	48.3	26.6	51.7
STATE AGENCY.	COUNT	45	7	9	10	41	13	33	8	24	40	33	36
	PERCENT	100.0	15.6	20.0	22.2	91.1	28.9	73.3	17.8	53.3	88.9	73.3	80.0
OTHER	COUNT	28	5	5	2	16	3	16	3	6	16	11	13
	PERCENT	100.0	17.9	17.9	7.1	57.1	10.7	57.1	10.7	21.4	57.1	39.3	46.4
TYPE OF DEPOSITORY													
REGIONAL.	COUNT	51	24	15	9	45	11	41	13	28	43	31	41
	PERCENT	100.0	47.1	29.4	17.6	88.2	21.6	80.4	25.5	54.9	84.3	60.8	80.4
SELECTIVE	COUNT	1240	238	174	119	874	145	851	107	376	807	506	762
	PERCENT	100.0	19.2	14.0	9.6	70.5	11.7	68.6	8.6	30.3	65.1	40.8	61.5
TYPE OF INSTITUTION													
LAND GRANT.	COUNT	57	25	11	6	44	9	48	15	20	46	30	43
	PERCENT	100.0	43.9	19.3	10.5	77.2	15.8	84.2	26.3	35.1	80.7	52.6	75.4
NON-LAND GRANT.	COUNT	1234	237	178	122	875	147	844	105	384	804	507	760
	PERCENT	100.0	19.2	14.4	9.9	70.9	11.9	68.4	8.5	31.1	65.2	41.1	61.6
TOTAL	COUNT	1291	262	189	128	919	156	892	120	404	850	537	803
	PERCENT	100.0	20.3	14.6	9.9	71.2	12.1	69.1	9.3	31.3	65.8	41.6	62.2

JOINT COMMITTEE ON PRINTING -- QUESTIONNAIRE TO DEPOSITORY LIBRARIES

PART G. -- QUESTION 5 -- SECTION 2 WITH PART A -- QUESTIONS 6 AND 7
TERMINAL LOCATION AND USERS
TABULATED BY TYPES OF LIBARIES SURVEYED, SELECTIVE OR REGIONAL DEPOSITORIES, AND LAND GRANT OR NON-LAND GRANT INSTITUTIONS

TYPE OF LIBRARY	TERMINAL LOCATED IN GOV'T DOC. DEPT.		USED BY GOV'T DOC. DEPT.		TOTAL NUMBER OF LIBRARIES	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
ACADEMIC	82	11.4	327	45.4	721	100.0
COURT.	1	1.8	16	29.1	55	100.0
FEDERAL AGENCY . .	1	2.5	9	22.5	40	100.0
LAW SCHOOL	7	5.2	70	51.9	135	100.0
PUBLIC	17	6.4	71	26.6	267	100.0
STATE AGENCY . . .	8	17.8	33	73.3	45	100.0
OTHER.	3	10.7	11	39.3	28	100.0
TYPE OF DEPOSITORY						
REGIONAL	13	25.5	31	60.8	51	100.0
SELECTIVE.	106	8.5	506	40.8	1240	100.0
TYPE OF INSTITUTION:						
LAND GRANT	15	26.3	30	52.6	57	100.0
NON-LAND GRANT . .	104	8.4	507	41.1	1234	100.0
TOTAL.	119	9.2	537	41.6	1291	100.0

APPENDIX 7

AMERICAN LIBRARY ASSOCIATION RESOLUTION

REVISION OF TITLE 44, PUBLIC PRINTING AND DOCUMENTS

Whereas, The Federal Government collects, compiles and produces information on every subject which pertains to life in our society, and

Whereas, Free access to Government information is crucial to informed public decisionmaking in a democratic society, and

Whereas, Libraries, including depository libraries, play a significant role in making this information available to the public, and

Whereas, The U.S. Congress is presently engaged in a comprehensive review of the United States Code, Title 44, "Public Printing and Documents," with the stated purpose of providing for improved administration of public printing services of public documents, Now therefore be it

Resolved, That the American Library Association reaffirms that:

1. There is a need for a national agency to provide a system of free, equal, effective and efficient distribution to depository libraries which permits full and free access to government publications in all formats including print, microform, machine-readable data files, audio and visual presentations or other means of information transfer,
2. There is a need for comprehensive bibliographic control of Government publications,
3. There is need for a system of regional and selective depository libraries through which Government information can be made available to the public,
4. There is a need for a comprehensive current and retrospective collection of Government-produced publications to serve depository libraries and the public as a source for reference and referral service, interlibrary loan, photoduplications and telefacsimile or other transmission systems,
5. There is a need for a comprehensive centralized or coordinated sales program to offer on a cost recovery basis all government publications in whatever format, without pricing basic documents so high that nonprofit libraries are unable to continue acquiring them for use by the public.

Adopted on June 28, 1979.

APPENDIX 8

DEPOSITORY LIBRARY COUNCIL TO PUBLIC PRINTER RESOLUTIONS AND BY GPO RESPONSES

Fall 1981

Resolution: DLC

Council recommends that as the Government Printing Office now begins to fulfill its role in providing bibliographic control for all Government publications, it investigates the feasibility of providing free access for Depository Libraries to unclassified bibliographic data bases produced by Federal agencies.

The feasibility study should evalute free access to at least the following data bases: NASA, DOE, ERIC, and MEDLINE.

Spring 1982

Response: Superintendent of Documents

Our general counsel advised us that, "Under the current provisions of title 44, the Government Printing Office is not required to provide access to bibliographic computer data bases belonging to Federal agencies to the Depository Libraries."

The complete opinion is attached for your review. While the opinion is negative in terms of access to data bases, this in no way precludes our continuing efforts to work with Federal agencies for cooperative bibliographic control. At present, there are several ongoing projects with Federal agencies to improve access and availability of documents for the Depository Library Program, which will be discussed later today by members of my staff.

Spring 1982

Opinion—General Counsel

Under the concurrent provisions of title 44, the Government Printing Office is not required to provide access to bibliographic computer data bases belonging to Federal agencies to the depository libraries.

Facts

At its fall 1981 meeting the Depository Library Council passed a resolution regarding the feasibility of the Government Printing Office providing free access for depository libraries to unclassified bibliographic data bases belonging to Federal agencies. It is the intention of the Council for the GPO to begin providing to the depository libraries access to information in various Government computer banks which have or have not been issued in publication form.

The Council justifies this access by arguing that the information contained in Government data bases should be made available to the public especially since the data base itself might be considered a Government document. See Transcript of Fall 1981 Meeting, Vol. II, pg. 47.

Discussion

The issue then to be resolved is whether the data contained in Government computers could be considered a "Government Publication" within the definition of 44 U.S.C. § 1901. If it can be so considered, then that data must be made available to depository libraries as directed by 44 U.S.C. § 1902. There is a subsidiary issue as to what method the Superintendent of Documents can use to provide access to any information contained in a data base but offered to the public in some periodic format.

The modern Depository Library Program developed into its present form over the last 200 years. Before the establishment of any systematic methods of distribution of public documents, Congress acted to make certain Government documents available to various libraries throughout the Union. In 1857 the practice of designating certain libraries and other institutions as depositories for Government documents was formalized by congressional resolution. From this date until 1962 various statutes were passed directing that all Government publications published by the GPO would be made available for distribution to the depository libraries. Prior to 1922 the libraries had no choice as to what publications would be received, any that were issued by the GPO were forwarded. However 42 Stat. 436 provided that these libraries could select what publications were desired.

The entire system was overhauled by the Depository Library Act of 1962, 76 Stat. 352. The reform was designed to eradicate certain inadequacies that had crept into the program. Of great importance to the drafters of this bill was the need for expanded availability of Government publications to the depository libraries. As stated above, prior to this act selection of documents by the depositories was made from documents actually printed at the GPO. Although the GPO was originally designed to produce all the printed materials of each of the branches of the Federal Government, the increased demand made it impossible for all Government Printing to be done at the GPO. In fact, by 1962 only half of Government printing was produced at the GPO. Therefore the depository libraries could avail themselves of only one-half of all Government publications. This artificial and arbitrary division of Government publications into GPO-printed and non-GPO-printed publications hampered the purpose for the depository program which was to make valuable and useful Government publications available to the public.

The 1962 Act was designed to alleviate this problem. Section 1901 defined " 'Government publication' as informational matter which is published as an individual document at Government expense, or as required by law." Section 1902 directed that these publications be made available to depository libraries. Senate Report No. 1587 which was issued by the Senate Committee on Rules and Administration to accompany the 1962 revision of the depository library system set forth the intent of Congress in passing these provisions. The purpose of the Act was to make available Government publications that were printed by any Government entity. However, in order for these publications to be available they first had to have been published as individual documents at Government expense or as required by law, Senate Report 1547, supra, pages 11-19. The congressional intent is clear, the act requires that only identifiable documents previously published by the Government are to be made available through the depository program. This would logically not include data in a computer that had not been reduced to a published format. Therefore, when such data has not been published as an individual document at Government expense or as required by law it is not "informational matter" or a "Government publication" within the definition of the statute.

This interpretation is further supported by a reading of 44 U.S.C. § 1903. This section empowers the Superintendent of Documents to request Government agencies to increase or decrease the number of copies of publications furnished so they can be distributed to the depository libraries. Clearly, for a publication to be available for distribution, it must be printed as a publication first. Therefore, the data which remains in a computer data base without publication cannot be considered "informational matter which is published as an individual document."

The next issue to be resolved is what method of access to information may be permitted by the Superintendent of Documents to the depository libraries for information that may be contained in data bases and also published in a periodic format. The Depository Library Act does not direct that Superintendent of Documents make published documents available in all possible formats to the libraries. It was the intent of Congress that only printed publications would be made available to the depositories. See §§ 1902 and 1903. The Superintendent of Documents is statutorily required to supply only whatever data has been published in a document or publication format in the printed format. Therefore, a library can not insist on access to a computer bank of information simply because that information is also available in a published format and that published material has been made available to the library.

For the above reasons, I conclude that the Government Printing Office is not required by law to provide access to Government data bases to the depository libraries.

[Signed]
GARRETT E. BROWN, JR.

Spring 1982

Resolution: DLC

Whereas, Public funds are currently and increasingly being used to produce electronic data files rather than to produce this same information in traditional print or fiche, and

Whereas, The trend toward data available only in electronic format is likely to continue, and

Whereas, The opinion of the GPO General Counsel is that "Under the current provisions of title 44, the GPO is not required to provide access to bibliographic computer data bases belonging to Federal agencies to depository libraries", and

Whereas, The J.C.P. has established an Ad Hoc Committee on Depository Library Access to Federal Automated Data Bases: Be it therefore

Resolved, That the Depository Library council reaffirms its support of access by depository libraries to unclassified Government information in electronic data files, and be it further

Resolved, That the Public Printer communicate to the J.C.P. that the Depository Library Council commends and supports the J.C.P. for undertaking a study to determine the cost-effectiveness and utility of making electronic data files available in the Depository Library Program, and be it further

Resolved, That the Public Printer communicate to the J.C.P. a Depository Library Council request that J.C.P. review title 44 and the J.C.P. Regulations for changes necessary to update the definition of "Government information" to encompass new technologies, and be it further

Resolved, That the Public Printer communicate to the J.C.P., a Depository Library Council request that options for providing access to unclassified Government-produced electronic data be included in the J.C.P. study, and be it further

Resolved, That the Public Printer request that the J.C.P. provide the Depository Library Council a status report on this resolution at the September 1982 meeting.

Fall 1982

Resolution: DLC

Public funds are currently and increasingly being used to produce electronic data files rather than to produce this same information in traditional print or fiche. The trend toward data available in electronic format is likely to continue. The Depository Library Council reaffirms its support of access by depository libraries to unclassified Government information in electronic data files. The Council recommends that necessary changes be requested to title 44 to update the definition of "Government information" to encompass new technologies. The Council also recommends that options for providing access to unclassified Government produced electronic data be identified. Because of the long range nature of this recommendation, the Council would appreciate being kept informed of new developments as they take place, and Council would volunteer its expertise on the subject.

Spring 1983

Response: Superintendent of Documents

The Government Printing Office is aware of the trend toward data availability in electronic format, and has some staff members tracking its progress. When the cost of necessary electronic equipment of high quality suitable for document transmission and receipt appears to be within the reach of the majority of depository libraries, we hope to move in that direction, just as we did earlier when microform equipment came within the reach of most libraries. As to updating the definition of "Government information" as used in title 44, to encompass the new and rapidly changing electronic technologies, we would welcome Council's generous offer of assistance on this. If Council would consider the problem and provide an encompassing definition by the fall meeting, we will welcome it.

On the possibilities of options for providing access to unclassified Government produced electronic data, as soon as the definition of "Government information" is broadened, we will actively pursue such options. Meanwhile, we would welcome Council compiling and maintaining a list of unclassified Government produced electronic data of interest to Depository libraries for review at the fall Council meeting.

APPENDIX 9

DECEMBER 9, 1982.

Ms. CAROL NEMEYER,
President, American Library Association,
Office of the Associate Librarian for National Programs, Library of Congress,
Washington, DC 20540.

DEAR Ms. NEMEYER: As you know, Federal Government information is increasingly being stored and retrieved through such new technologies as video discs, electronic transfer, and television, rather than through the traditional formats of paper and microform. The result is that an increasing amount of information in electronic format is not being provided to depository libraries. One example of this practice involves the summary tape file data from the decennial census of population and housing.

In order to evaluate the feasibility and desirability of providing access through these new technologies to depository libraries, the Joint Committee on Printing has established an Ad Hoc Committee on Depository Library Access to Federal Automated Data Bases. The commitee will be composed of members representing the library community, the private sector, and Government agencies.

The committee will be asked to determine: (1) What and how much Federal Government information is in electronic formats? (2) Do depository libraries have the ability to access the new formats? (3) What are the costs and benefits of providing information in electronic format? The committee will also identify major policy areas which need to be addressed in order to meet the intent of title 44, United States Code, to make Government information publicly available at no cost to the citizen, through the depository library system.

Since the advice of your organization on this issue is important to the Joint Committee, I would appreciate your recommending the names of three possible candidates for this committee by December 1, 1982. One of the three persons will be selected by the Joint Committee to serve on the committee.

With kindest personal regards, I am,

Sincerely yours,

CHARLES McC. MATHIAS, JR., *Chairman.*

APPENDIX 10

BIBLIOGRAPHY OF PUBLICATIONS IDENTIFYING FEDERAL GOVERNMENT-OWNED SOFTWARE, GOVERNMENT DATA BASES, AND PRIVATE SECTOR DATA BASES INCORPORATED GOVERNMENT INFORMATION

[Listed below by title are directories that identify only Federal Government-owned software, Government data bases and private sector data bases incorporating Government-originated information:]

A Directory of Computer Software. Prepared by the National Technical Information Service, U.S. Department of Commerce. (PB84-134071) Springfield, VA: NTIS, 1984.

A Directory of Computerized Data Files. Prepared by the National Technical Information Service, U.S. Department of Commerce. (PB84-160126) Springfield, VA: NTIS, 1984.

A Directory of Federal Statistical Data Files. Prepared by the National Technical Information Service and Office of Federal Statistical Policy, U.S. Department of Commerce. (PB84-133175) Springfield, VA: NTIS, 1981.

The Federal Data Base Finder: A Directory of Free & Fee-Based Data Bases Available from the Federal Government, 1984-85 Edition. Edited by Sharon Sarozny and Monica Horner. Potomac, MD: Information USA, 1984.

Federal Information Sources and Systems: A Directory Issued by the Comptroller General. Prepared by the U.S. General Accounting Office. (1980 Congressional Sourcebook Series, PAD-80-50) Washington, DC: U.S. Government Printing Office, 1980.

National Technical Information Service Data Files Listing. Prepared by the National Technical Information Service, U.S. Department of Commerce. (PR-700) Springfield, VA: NTIS, 1983.

[Listed below by title are directories that identify a variety of information sources, including, but not limited to, Federal Government data bases and private sector data bases incorporating Government-originated information:]

Computer-Readable Data Bases: A Directory & Data Sourcebook. Edited by Martha E. Williams with Laurence Lannon and Carolyn G. Robins. 2 volumes. Chicago and New York: American Library Association and Elsevier Science Publishers, 1984.

Directory of Online Data Bases. Compiled and edited by Ruth N. Cuadra, David M. Abels and Judith Wanger. Santa Monica, CA: Cuadra Associates, Inc. (Quarterly).

Information Industry Market Place 1984: An International Directory of Information Products and Services. New York: R.R. Bowker, 1984.

Information Sources 1984: The Annual Directory of the Information Industry Association. Edited by Faye Henderson & Fred Rosenau. Washington, DC: IIA, 1983.

APPENDIX 11

ACRONYMS AND INITIALISMS

Acronyms and initialisms are identified in the text immediately following the first usage of the full name of the organization or subject to which they apply. For the convenience of the reader, they are also listed in this appendix in alphabetical order followed by the full name of referenced organization or subject. See also list of research publications on pp. 57-58.

AALL—American Association of Law Libraries
ACS—American Chemical Society
AGRICOLA—Agricultural online access, a data base of the USDA
ALA—American Library Association
BLS—Bureau of Labor Statistics, U.S. Department of Labor
BRS—Bibliographic Retrieval Services, a data bank operated by Bibliographic Retrieval Services
CASSIS—Classification and Search Support Information System, a data base of the Patent & Trademark Office
CBEMA—Computer & Business Equipment Manufacturers Association
CRS—Congressional Research Service, U.S. Library of Congress
CSIN—Chemical Substances Information Network, a software program developed under contract to the EPA
DIALOG—A data bank operated by DIALOG Information Services, Inc. (formerly known as Lockheed DIALOG)
DLC—Depository Library Council to the Public Printer
DMA—Defense Mapping Agency, U.S. Department of Defense
DOE—U.S. Department of Energy
DOE/TIC—Technical Information Center, U.S. Department of Energy (Oak Ridge, TN)
EPA—U.S. Environmental Protection Agency
ERIC—Educational Resources Information Center, a data base sponsored by the National Institute of Education, U.S. Department of Education
GAO—U.S. General Accounting Office
GPO—U.S. Government Printing Office
GRA&I—Government Reports Announcements and Index, hardcopy publications of NTIS indexes which are also the basis for the NTIS data base
JCP—Joint Committee on Printing, Congress of the United States
LEGIS—A data bank operated by the House Information Systems for the internal use of the legislative branch
LEXIS—A data bank operated by Mead Data Central
LLNL—U.S. Lawrence Livermore National Laboratory, a national laboratory under contract to DOE
MARC—Machine Readable Cataloging, a data base developed by LC
MIT—Massachusetts Institute of Technology
NAL—National Agricultural Library, U.S. Department of Agriculture
NASA—U.S. National Aeronautics and Space Administration
NCLIS—U.S. National Commission on Libraries and Information Science
NLM—National Library of Medicine, U.S. Department of Health & Human Services
NSF—U.S. National Science Foundation
NTIS—National Technical Information Service, U.S. Department of Commerce
OCLC—Online Computer Library Center, Inc., a bibliographic utility
ORBIT—A data bank operated by SDC Information Services
OTA—Office of Technology Assessment, Congress of the United States
PDL—Patent Depository Libraries
PTO—Patent and Trademark Office, U.S. Department of Commerce
RECON—RECON, a software program used by NASA and DOE to manage their bibliographic data bases
RLIN—Regional Library Information Network, a bibliographic utility
SCORPIO—A data bank operated by the Library of Congress for the internal use of the legislative branch
SDC—State Data Centers, "depositories" for census tapes
SLA—Special Libraries Association
USDA—U.S. Department of Agriculture
USGS—U.S. Geological Survey, U.S. Department of the Interior
WESTLAW—A data bank operated by West Publishing Co.
WLN—Washington Library Network, a bibliographic utility

APPENDIX 12

GLOSSARY OF TERMS

Since this report incorporates statements from a variety of individuals and groups, the same basic concepts are occasionally expressed using different terms; similarly, a term may be used to mean to distinct things in different segments of this document. Although the intent of the speaker is usually clear in the context in which the information is provided, the Ad Hoc Committee felt it would be useful to provide the following glossary in order that the vocabulary as used by the Committee in the body of the report be made both clear and consistent. In addition to terms that are actually used in the text, the glossary lists some terms which may be useful to the reader in understanding the background or environment of the subject matter.

Bibliographic utility: A type of network, often not-for-profit or nonprofit designed to facilitate the sharing of electronic bibliographic (cataloging and holdings) records. Examples include OCLC, RLIN, and WLN. Services offered by a bibliographic utility may include interlibrary loan, electronic mail, etc.

Data bank: A collection of data bases. An example might be the Lockheed DIALOG data bank which includes approximately 200 data bases.

Data file: See Data base.

Data base: A coherent collection of data resident in a computer or stored on any of a variety of electronic media, for example, magnetic tape or magnetic disk, videodisk or optical-digital disk.

Electronic media: Materials on which data are electronically recorded and from which data are electronically retrieved. Examples are magnetic tape, magnetic, disks, video disks, and optical-digital disks, as distinct from nonelectronic storage media such as books, microforms, punch cards, and paper tapes.

Gateway: An electronic system or device acting as an intermediary between users and the data banks from which they wish to obtain information. The gateway facilitates access by translating or formatting user queries to make them meaningful to a variety of data bases and/or data banks and is intended to make the data bases and/or data banks more "user friendly."

Magnetic disk: A flat round plate covered with a special magnetic material by means of which digitized data may be recorded and retrieved via random access. This is a form of nonpermanent and reusable storage from which data can be erased or written over. The two basic types are floppy disks, which are usually 5¼ or 8 inches in diameter and are used for home computers and word processors; and hard disks or disk packs, which are attached to computers as peripheral devices.

Magnetic tape: A flat ribbon covered with a special magnetic material by means of which digitized data may be recorded and retrieved serially. This is a form of nonpermanent and reusable storage from which data can be erased or written over.

Network: The interconnection of a computer with two or more other computers or terminals via communication lines in order to obtain, exchange or share data among the connected devices.

Off-line: A method of electronic access to a data base to input or extract data in which the response is not immediate, interactive or direct. Instead user queries are batched for later (usually off-peak) processing and responses are generated for subsequent transmission to the user either electronically or by means of a printout.

On-line: A method of interactive, immediate, and direct electronic access to a data base to input or extract data. The user is connected directly to the computer during the processing of his query.

Optical-digital disk: A flat, round plate of non-magnetic material on which digitized data are stored. Optical disks are read by a laser beam. This is a form of permanent (read only) electronic storage, although erasable disks are under development. Data may be either a digitized representation of optical or audio material, such as that obtained by raster scanning a document, or it may be digitized codes which represent characters and numbers.

Video disk: (Also frequently spelled video disc) A flat, round plate on which are inscribed grooves in which are recorded the analog representations of data, which may be either pictorial or audio. Video discs are read by a stylus similar to a phonograph recording. This is a form of permanent (read only) electronic storage.

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